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Notable Increase In Pipe Line Runs

Average daily production in United States week ending Dec. 29, 1,947,550 bbls.

Heavy Purchases of Crude Oil in Smackover and Wyoming Increases Net Production Figures For the Week

Gain in daily production in United States week ending Dec. 29, 21,948 bbls.

By James McIntyre

An increase of 21,948 barrels in the daily average production of the fields of the United States for the week ending December 29 over the record of the week before is more apparent than real. Extraordinary draughts made on Smackover heavy oil amounting to 104,930 barrels a day and unusually heavy runs from Wyoming fields were responsible for the increase, while as a matter of fact neither of those producing divisions showed an increase in gross production. Better prices for crude induced operators in Smackover to let go of some of their surplus heavy oil. Gross production in Oklahoma showed a slight decrease owing to the continued declines in Tonkawa and Burbank.

North Louisiana gained a little in production, and the pipe line runs for Arkansas indicate an increase of 37,740 barrels a day. North Central Texas fell off 1,885 barrels and the East Central Texas division dropped to 122,500 barrels, 6,100 barrels less than last week, for which the Powell Field may be held accountable. The Eastern fields show a decline of 1,190 barrels a day but the Wyoming-Montana division is credited with an increase of 12,830 barrels a day. California fell off 13,000 barrels a day, Santa Fe Springs showing the greatest decline. The only field to show an increase was Long Beach, which gained 2,000 barrels a day.

Usual Holiday Lull

The usual holiday lull in field activities marks all the producing divisions of the United States. From December 20 until after New Year's day is a period in which much field work is shut down while crews scatter in every direction to be home for the Yule tide. There will be no delay in their return because there is a feeling among oil men that the early days of the new year will witness a generally higher crude market and a consequent resumption of much long-deferred drilling both in old pools and in many favorable looking wildcat districts. Some of the more conservative operators view this with trepidation. The bitter experience of the past year has made them cautious, and their feeling is that no unusual amount of drilling should be started anywhere until spring. The average operator, however, will not wait until spring if the market price offered is sufficiently high to warrant the hazard of drilling for new production. The recent advances in crude prices in all the fields east of the Mississippi and in the Mid-Continent and Gulf Coast districts were, at the close of the year, regarded as a foretaste of what the new year would bring forth. In Oklahoma, where operators have held back for months because of overproduction, the action of The Texas Company and the Magnolia Petroleum Company in advancing crude prices was expected to be generally followed soon after the first of the year by the Prairie, Sinclair and other large purchasing interests, although the Prairie has been running oil into storage ever since it modified its proration order in November.

High Spots in Oklahoma

The Wildhorse district in Osage County is credited with a 2,250-barrel well, drilled by the Tidal Osage Oil Co. in Section 34-22-10, while the Country Club district in Osage County, just north of the city of Tulsa shows a 1,600-barrel Wilcox sand producer. Lincoln County, which has long been looked upon as a potential oil region, has finally planted itself with some degree of firmness in the list of producing counties with a 1,400-barrel well drilled by the J. A. Hull Oil Co., in Section 12-14-6 to sand at 4,055-90 feet. It offsets a good well drilled by the Union Petroleum & Supply Company, which has been in for some time and is still flowing over 500 barrels a day. This pool is west of the Bristow Field in Creek County. The Red River district in Tillman County shows a batch of wells averaging 125 barrels in Township 5s-14w. The lid continues to stay fast on the Burbank Field and nothing of importance was noted in that district in the past week. The Wewoka Field shows an 891-barrel decrease in average daily production, notwithstanding the addition of one producing well.

Greenwood County, Kansas, assumed new importance with the completion of a well in Section 14-24-9, which started at 737 barrels the first 12 hours and is rated as a 1,400-barrel producer. It was drilled by Rodgers and others on the James Bratton farm to a total depth of 2,173 feet. In the old Montgomery County territory, the pool opened by the Red Bank Oil Company last August, has been extended half a mile west with a 100-barrel well in Section 17-35-17. Operators are playing this pool to extend into Labette County.

Powell's Decline Checked

The recent floods in East Central Texas put a stop to all operations in the Powell Field. No new work has been started in two weeks, but after the flood waters subsided operators were given the opportunity of installing pumping outfits on their wells which stayed the decline in production in that field. The daily output fell as low as 75,000 barrels a day last week, and then started upward ending the week with a daily production of 91,000 barrels, and holding the average for the week at 81,000 barrels.

In California the feature of the field news was the discovery of production at 4,625 feet in the old Whittier Field. The Whitley Oil Company completed a 2,400-barrel well. This territory was given up as hopeless three years ago, but the Whitley interests decided to drill a deep test after having spent $1,000,000 on shallower developments. They were a year and a half in the drilling of the successful deep test. This new development in Whittier rivals the Compton Field in interest.

In the North Central Texas Field considerable attention is being paid to a recent shallow sand discovery in the San Angelo district lying between the Regan County and Mitchell County fields. Sand at 1,423 feet found in test of The Chicago-Texas Oil & Gas Sndicate, 1½ miles from Stirling City, looks good for at least a 50-barrel production.

In Guadalupe County, southwest of the Luling Field in Texas, the United North & South Oil Company has completed a 250-barrel well in No. 1 Lopez, drilled to a depth of 2,170 feet. It is 3 miles in advance of production. In the Luling Field a 1,600-barrel well was completed by the M. K. Towns Production Company. A wildcat test of the South Dayton Oil Company in Liberty County, is bailing 15 barrels at 3,140 feet.

In the Gulf Coast fields production has fallen off slowly but steadily of late and some companies are drawing on stocks to fill orders. Stocks in the Coastal area in steel and earthen storage were 17,495,633 barrels on December 15, or 586,250 barrels less than 30 days before. The daily crude requirements of Coastal refiners is a little more than the field is producing and a $1.50 price for Grade A oil is expected early in the new year to stimulate new drilling for this grade of production.

Rocky Mountain Drilling Plans

The great gas well of the Union Oil Co. in the Wellington district, Larimer County, Colorado, has been shut in. The territory all around Fort Collins, the county seat, is in for development. The Sinclair interests have leased a large block near Loveland and will start a test at once.

The Utah Oil & Refining Company's test in the Big Horn Basin, east of Thermopolis, Wyoming, opens a new heavy oil pool. The well is good for 300 barrels a day on the pump, for which there is a market at the Standard of Indiana's asphalt plant at Greybull.

PRODUCTION IN THE UNITED STATES

Estimated daily average production in the oil fields of the United States for the week ended December 29, and a comparison with the previous week follows:

Field	Dec. 29	Dec. 22
Oklahoma—Northern Fields:		
Tonkawa	44,250	44,885
Burbank	71,350	73,897
Other Osage Fields	30,600	29,500
Cushing and Shamrock	24,400	24,420
Bristow and Eastern Bristow	47,210	47,610
Northern Miscellaneous	89,980	89,015
Southern Fields:		
Healdton	17,250	17,250
Hewitt	20,300	20,550
Southern Miscellaneous	24,600	24,905
Total Oklahoma	369,940	372,032
North Louisiana	54,270	53,800
Arkansas—		
El Dorado	11,990	10,180
Smackover Light	27,805	20,400
Smackover Heavy	104,930	79,655
Other Arkansas Fields	13,265	10,015
Total Arkansas	157,990	120,250
North Central Texas	110,215	112,100
East Central Texas (Mexia, Currie, Corsicana, Powell)	122,500	128,600
Kansas	71,500	71,300
Total Mid-Continent Area	886,415	858,082
Gulf Coast	86,790	91,835
Eastern	109,300	110,490
Wyoming-Montana	162,045	149,195
California—		
Santa Fe Springs	172,000	181,000
Long Beach	232,000	230,000
Huntington Beach	66,000	69,000
Torrance	38,000	40,000
Remainder State	195,000	196,000
Total California	703,000	716,000
Total United States	1,947,550	1,925,602

Increase, 21,948 Barrels

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World's Richest Market for Petroleum

Atlantic Seaboard Dependent More and More Upon Farther Fields. Six Great Companies Leading Factors on the Coast

By N. O. Fanning

NEW YORK, Dec. 31.—Approximately two-thirds of the oil moved to the Atlantic Seaboard in oil tankers represent the shipments of six petroleum companies which, it can be said without fear of contradiction, are the leading factors in the Atlantic Seaboard oil markets. The leading one of these companies is the Standard Oil Co. of New Jersey, and the other five in the order of the quantities of oil shipped are Pan-American Petroleum & Transport Co., Gulf Refining Co., The Texas Co., Standard Oil Co. of New York and the Atlantic Refining Co.

The six companies named control refining capacity on the Atlantic Seaboard amounting to about 400,000 barrels daily. Between July 1 and November 30, 1923, they moved, according to a conservative estimate, 45,000,000 barrels of oil to the Atlantic Coast by tank steamer, out of a total movement of 68,000,000 barrels. In other words, their shipments averaged about 291,000 barrels daily, against a total movement of 441,000 barrels daily.

It is estimated that the bulk of the tank steamer movement represents either crude petroleum for the Atlantic Seaboard refineries, or fuel oil to supply the Atlantic Coast bunker oil trade, which is very large. The bulk of the transatlantic liners are now using fuel oil instead of coal.

New Jersey Standard Dominant

Two of the six largest factors in the Atlantic Seaboard area have no refining capacity on the Atlantic Coast, namely, Pan-American Petroleum & Transport Co. and the Gulf Refining Co. The bulk of their shipments represent fuel oil. Pan-American Petroleum is the largest factor in supplying bunker oil on the Atlantic Seaboard, although it shares this business principally with the Standard Oil Co. of New Jersey. The bulk of its oil comes from Mexico.

The Standard Oil Co. of New Jersey, which owns the largest fleet of ships flying the American flag and the biggest tanker fleet in the world, moves the largest amount of oil to the Atlantic Coast. Conservatively estimated, this company received a total of 18,707,000 barrels of oil by water during the five months from July to November, 1923, or about 28 per cent of the total movement. At least one-third of this oil came from the Pacific Coast, and is said to have consisted largely of fuel oil.

Standard of New Jersey has the largest marketing territory on the Atlantic Seaboard of the Standard Oil companies, and furthermore is the largest exporter of oil from the United States.

The chief competitors of the Standard Oil Co. of New Jersey of the six companies named are the Gulf Refining Co., The Texas Co., and Atlantic Refining Co. The latter has just recently branched out beyond the borders of Pennsylvania and Delaware, and has infringed not only on the territory of the Standard Oil Co. of New Jersey, but also in that of the New York Standard. Both Gulf Refining and The Texas Co. have no State limits, marketing oil in every State on the Atlantic Seaboard.

One of the remarkable facts about the Atlantic Seaboard market is the high place occupied by the Gulf Refining Co., which, although having no refineries in this territory, disposes of 38,000 barrels daily or more of products here, all of which comes from Port Arthur.

The Texas Co. occupies a position approximating that of the Gulf Refining Co., and has three refineries on the Atlantic Seaboard.

The Atlantic Seaboard of the United States is the richest market for oil products in the world, and this includes nearly every product of crude oil. For this reason, far sighted oil concerns have paid particular attention to this field. It is comparatively undeveloped as a refining center, for although there is large capacity, it is small compared with domestic and export consumption.

Originally three big Standard Oil companies occupied the field practically alone. These were the Standard Oil Co. of New York, covering New York State and New England; Standard Oil of New Jersey, occupying New Jersey, Maryland, Virginia, West Virginia and the District of Columbia, and the Atlantic Refining Co., marketing in Pennsylvania and Delaware. The fields occupied by these concerns were large enough to hold them and still are with the exception of the one occupied by Atlantic Refining, which concern is now branching out considerably.

But in recent years a host of new comers have made their appearance in this territory, and the markets would have been overcrowded were it not for the steady increase in consumption. The old companies have kept on enlarging their business in spite of competition offered by the other concerns.

New Sources of Oil

It is one of the tricks of fate that oil should be discovered farther and farther from the Atlantic Seaboard district all the time, making the transportation problem in this area particularly difficult. Originally, crude from the Appalachian fields supplied the total requirements of the Atlantic Seaboard. Now, of the estimated consumption, export and domestic, of 500,000 barrels daily, probably less than 50,000 barrels daily come from the Appalachian fields. The rest is piped from the southwest, or brought by tank steamer from the Gulf Coast, Pacific Coast, Mexico, Peru and Venezuela.

Each change in source of crude means a readjustment of transportation for the eastern refining and marketing companies. Just at present the tank steamer is the chief reliance of the Atlantic Seaboard for its oil supplies. The tank steamer has supplemented, and partly replaced, the pipe line. As the tanker affords an extremely cheap method of transportation, oil concerns which are large factors in the Eastern markets all have tanker fleets.

The bringing of California oil to the Atlantic Seaboard through the Panama Canal necessitated the employment of practically all the oil tankers which had been idle, and indications are that from now on tanker fleets will have to be added to gradually to meet the growing demand for oil from far away fields.

The supplying of the Atlantic Seaboard oil markets is one of the examples of the weighty problems which the oil companies must face in their business. Too much stress is laid on the drilling of wells and too little on the work of getting oil to the consumer, in the popular picture of the oil business. The petroleum industry cannot load its raw material on railway cars destined for the refineries and forget about it. It has had to provide its own transportation, practically throughout, and has had to bear the responsibility of caring for the oil from the well to the consumer.

In addition to the burden of supplying and providing for transportation, the larger oil companies now carry on a great deal of wildcatting, which is a means of obtaining production not as certain as that of mining coal, for instance. The possibility, or rather the probability, of radical changes in the source of crude also complicates the transportation problem. Such changes can hardly ever be anticipated far in advance.

The six companies which are prominent in the Atlantic Seaboard oil markets are examples of the new type of oil company, which differs materially from the old, yet still general, conception of an oil company. They wildcat, produce crude, transport it to their refineries, refine it and market the products, in addition to the many other problems which all this entails. This type of company is a big industrial enterprise, supplying one of the world's most essential groups of commodities.

There are many other companies of this type. These are gradually gaining the upper hand in oil affairs, and the other types of oil companies are gradually becoming subsidiary to them. This can be seen by anyone who wishes to study the evolution of the oil business of the United States.

SINCLAIR GETS OIL CONCESSION IN FOUR PERSIAN PROVINCES

What is said to be the largest concession in acreage ever granted an American oil company is reported to have been obtained by the Sinclair Consolidated Oil Corp. from the Persian Government. It is reported to consist of nearly 90,000,000 acres in four of the five northern provinces.

The Sinclair company announced the news on receipt of cable advices from its representative at Teheran and simultaneously the London Daily Mail's Teheran correspondent reported that the fifth province was reserved for the Anglo-Persian company. A dispatch from Washington says the State Department had been officially advised that the Sinclair Corp. has received a concession for the development of great oil resources in northern Persia.

The matter has been to debate before the Medjilas, or Persian Parliament, for many months, during which pressure has been brought to bear by the British Government, which was interested in furthering the project of the Anglo-Persian Co.

The whole southern field of Persia is at present under the control of the Anglo-Persian Co. The Government of Persoia has been committed to the idea of an American company operating the northern petroleum fields. A controversy has existed, however, between the Standard Oil Co. of New Jersey and the Sinclair Co. as to which should eventually obtain access to the northern fields.

The Persian Government objected to the Anglo-Persian Co. and is understood to have taken the position that with the Anglo-Persian already in control of the southern fields, any further additions to its power in economic and financial affairs might be an encroachment upon the sovereignty of the Persian nation.

Consequently, some months ago, the Medjilas resolved that "an invitation should be extended to an independent and reputable American company" to develop petroleum resources. At that time the Standard Oil Co. had agents in Persia and a bid was submitted which was regarded by the Persians to be a joint proposition from the English Anglo-Persian concern and the Standard Oil. The offer was rejected by Parliament.

About that time the Sinclair Co. sent an agent to the fields who was favorably received by Persian officials. With the appearance of the Sinclair representative a new offer was made, whereupon the Standard is said to have deserted the English company and entered into competition with the Sinclair group.

Conditioned on Loan

The Persian Government stipulated that there should be no English capital in any corporation which had control of the northern fields, and at the same time required that any successful American company should guarantee a loan of $10,000,000 in the New York market so as to increase the credit of the Persian Government.

Since the latter part of 1919 there has been keen rivalry between British and American oil interests for these concessions. The fight at one time was a four-cornered affair. The Anglo-Persian Oil Co. was the first to seek them; then came the British Government presumably acting on behalf of the Anglo-Persian Co.; next was the Standard Oil Co. of New Jersey in negotiations which, it was reported, also involved the Anglo-Persian Co., and lastly the Sinclair group.

The Anglo-Persian Co. is the only oil company now operating in Persia, and the fact that one of the five concessions has just been awarded to it as against four to the Sinclair group raises the question whether the Persian Parliament will consent even to this addition to the British company's interests in Persia.

There has been mention of a possible

(Continued on Page 110)

Explosion of Nitro Near Franklin, Pa., Kills Six, One Woman

FRANKLIN, Pa., Jan. 1.—Six persons were killed today in a premature explosion of nitro glycerin at the "shooting" of an oil well on the farm of John A. Stone, 5 miles from here. The dead are: Mr. and Mrs. Paul Stone, Herbert and John Whitman, brothers; Eugene H. Neil and Robert Kinnear.

Stone, who was a son of the owner of the lease, and his wife went to witness the operation.

When Kinnear, who was to shoot the well, opened the can containing 15 quarts of nitro glycerin, he warned those present to move away. J. D. Scrivens was only 100 feet away when he was knocked to the ground by the explosion, Lawrence Mawhinney, the other survivor, had gone to a nearby creek for a bucket of water and was also knocked to the ground.

Kinnear was poring the explosive when it went off and his body was blown to bits. The bodies of the other victims were badly mangled.

The explosion rocked houses within a radius of a mile. A wrench, weighing 125 pounds was hurled through a steel oil tank 50 feet away.

Scrivens said that just before opening the explosive Kinnear declared it had frozen and that he had thawed it out, warning Mrs. Stone she had better move back. Mrs. Stone declined, replying she wanted to see it all.

All Initial Production Records Smashed

Fields East of California in 1923 Show Enormous Total of 4,601,606 Bbls. in First-Day Output From 15,237 New Oil Wells

By James McIntyre

PRELIMINARY SUMMARY OF FIELD OPERATIONS EAST OF CALIFORNIA FOR 1923

	Comp.	Prod.	Dry	Gas
Eastern	4,525	18,060	681	847
Central Ohio	642	1,657	193	365
Lima	657	13,151	75	17
Indiana	175	4,411	49	4
Kentucky	1,942	32,692	471	80
Tennessee	54	1,684	41	1
Mississippi	13	0	12	1
Georgia	1	0	1	0
Alabama	1	0	1	0
Michigan	1	0	1	0
Illinois	260	5,014	94	18
Kansas	1,405	61,372	535	63
Oklahoma	5,833	1,277,936	1,731	587
N. C. Texas	2,549	178,685	832	77
E. C. Texas	771	1,619,527	143	3
Gulf Coast	1,626	391,573	466	20
Arkansas	1,670	831,927	231	92
North La.	478	19,184	136	135
Wyoming	550	126,545	40	4
Montana	248	14,688	70	1
Utah	3	0	2	1
New Mexico	7	3,000	2	2
Colorado	2	500	0	1
Total 1923	23,453	4,601,606	5,807	2,319
Total 1922	23,759	3,916,693	5,329	2,011
Difference	306	684,913	478	308

A preliminary survey of the field work accomplished east of California in 1923, which will be subject, perhaps, to minor revisions when the official annual report is given by The Oil and Gas Journal in the issue of January 31, shows a remarkable increase in the quantity of initial production over results in other years.

It was by far the biggest year in new production of any in the history of the American oil development, and in the face of the tremendous production of the California fields and the fact that California oil entered into successful competition with the oils from other producing divisions in the markets of the East. This competition was strong enough to materially affect the eastern fields and Oklahoma and Kansas, driving crude prices down everywhere and discouraging new work in many pools.

There were, however, 23,453 wells completed in the year just closed, yielding in initial production the enormous total of 4,601,606 bbls. The dry holes numbered 5,807 and the gas wells 2,319. This was a decrease of only 306 in completions, but an increase of 478 in dry holes and of 308 in gas wells, as compared with the previous year. The gain in initial production was 684,913 bbls., all the more significant from the fact that 1922 had broken all previous records in this respect.

The completions for the past year were made up of 15,327 oil wells, 5,807 dry holes and 2,319 gas wells. The oil wells averaged 300 bbls. in initial production. In 1922 the oil wells drilled numbered 16,419, the dry holes 5,329 and the gassers 2,011. The oil wells averaged 238 bbls. per well in initial production. The enormous quantity of new production is reflected in the increase in the production of the fields east of California which will be approximately 113,000,000 bbls. greater in 1923 than in 1922, Oklahoma, East Central Texas, Arkansas and Wyoming supplying most of the excess crude.

Nearly 25 per cent of the wells drilled in 1923 in the fields included in this review were dry. Sixty-five per cent of the wells were productive of oil and 10 per cent were gas wells. In 1922 the percentage of oil wells was 69, or 4 per cent higher than last year, but their average initial production was about 20 per cent less than the oil wells of the past year. The percentage of dry holes drilled in 1922 was 22 plus, or about 2 per cent less than in 1923. The gas wells in 1922 numbered about 8 per cent of the wells drilled.

Mid-Continent's Great Record

In the Mid-Continent area, Kansas, Oklahoma, North Central Texas, East Central Texas, Arkansas and North Louisiana, there were 12,706 wells completed in 1923, or 144 more completions than were reported from the same area in 1922. The initial production in 1923 was 3,988,631 bbls., or 916,766 bbls. in excess of the record for 1922. The dry holes numbered 3,608, or 532 more than in 1922, and the gas wells 957, or 109 more than in the previous year. The completed wells which produced oil numbered 8,141 in the year just closed and their average initial production was 490 bbls. A much higher percentage of oil wells was recorded in 1922 when 8,638 of the completions produced crude petroleum, but their average initial production was only 356 bbls., or 134 bbls. per well less than shown by the 1923 crop.

The record of the Mid-Continent for the two years follows:

	Comp.	Initial Prod.	Dry	Gas
1923	12,706	3,988,631	3,608	957
1922	12,562	3,071,865	3,076	848
Difference	144	916,766	532	109

In 1923 the percentage of oil wells drilled in the Mid-Continent was 64, and in 1922, 69. The percentage of dry holes in 1923 was about 28 and in 1922 about 24, while the percentage of gas wells in 1923 was about 8 and in 1922 about 7.

In the year just closed the East Central Texas area and Arkansas witnessed the most sensational development of any of the divisions in the Mid-Continent. The Powell Field in Navarro County, Texas, and the Smackover Field and its extensions in Ouachita and Union Counties, Arkansas, developed hundreds of big producing wells, resulting in a large increase in new production over the records of 1922 for the same divisions. In the East Central Texas division of 1922 Mexia was the outstanding field, but the whole area had ceased to be important in the early months of 1923 and while Powell was opened in January it had almost been given up as a disappointment when the Hughes Development Co.'s big well came in in May and changed the whole situation. In the last six months of the year 657 wells were completed with a total initial production of 1,551,802 bbls., most of which came from wells in the Powell Field.

The year's record in the East Central Texas area showed 93 fewer completions than in 1922, but the initial production of 1,619,527 bbls. was 868,757 bbls. in excess of that of the previous year; the 143 dry holes drilled were 157 fewer than the 1922 crop of dusters. There were only 3 gas wells completed or 13 less than in 1922. The number of oil wells was 625 and these averaged 2,591 bbls. in initial production as against the 1922 record of 548 oil wells and 1,223 bbls. initial production.

A total of 1,670 wells were completed in Arkansas in 1923 with 831,927 bbls. initial production, 231 dry holes and 92 gassers. This is an increase of 950 in completions over the State's record for 1922, and an increase of 393,367 bbls. in initial production. There were 140 more dry holes than in the year before and 46 more gas wells. The oil wells numbered 1,347 in 1923 and averaged 618 bbls. in initial production, while in 1922 the oil wells totaled 583 with an average initial production of 752 bbls.

Oklahoma's New Record

Oklahoma's record of 1,277,936 bbls. in initial production in 1923 has never been equaled in that State. The record for 1922 was 1,190,165 bbls. and the only other year that showed a million-barrel initial output was 1915, in the days of Cushing, when a total of 1,034,700 bbls. was registered. Another feature of the new production record of last year was that it came from a much smaller number of completions than recorded in the State in some other years. There were 5,833 wells completed last year, or 315 fewer than in 1922. Oklahoma operators imposed a shutdown on themselves last year following the inroads made on the Oklahoma crude market by the immense shipments of oil from California and the tremendous production in the Powell Field. Completion figures for other years show best how Oklahoma operators succeeded last year in their curtailment of drilling. There were 6,148 wells completed in 1922, 5,715 in 1921, 9,097 in 1920, 8,171 in 1919. Away back in 1913 9,131 wells were drilled.

There were 3,515 oil wells drilled in the State in 1923 and they average 363 bbls. in initial production, which was the best average ever recorded in the State for any one year. The nearest approach to it was in 1915 when the oil wells completed averaged 295 bbls. per well. In a period covering 14 years, 1910 to 1923 inclusive, The Oil and Gas Journal's records show 94,535 completed wells in Oklahoma. Of these 68,279 were oil wells, 18,965 were dry and 7,291 were gas wells. The total initial production in the 14 years was 8,474,800 bbls., or an average of 124 bbls. to the well, about one-third the average of the wells completed in 1923. As the development of Oklahoma began in 1891 and as it was considered an important oil producing State as far back as 1904, it will be seen that the field improves with age. Its record for 1923 could easily have been surpassed had there been sufficient demand for Oklahoma crude. In eight out of the previous 13 years there were more wells completed than in 1923, because Oklahoma was looked to as the biggest source of supply and there is hardly a doubt that 1924 will see a great increase in the amount of field work done, but it is doubtful if the results will come up to those of last year. The development of the Burbank, Tonkawa and Bristow fields was mainly responsible for the extraordinary initial production and the big average initial production. Of these three developments Burbank promises the largest future returns from drilling, both in Osage and Kay Counties.

Kansas' Decline

Kansas experienced a decline in field work and in initial production. Its 1,405 completed wells were 235 fewer than the showing for 1922 and the initial production of 61,372 bbls. was 13,021 bbls. less than in the year before. There were 807 oil wells in the last year's completions and their average initial production was 76 bbls. as against 70 bbls. for the 1,057 oil wells finished in 1922. Greenwood County was the most active field of operations in the State last year, but Cowley County showed some good results from an increased amount of wildcatting.

Active in North Central Texas

The North Central Texas division experienced more field activity in 1923 than in the previous year. There were 2,549 wells completed, a gain of 424 over the 1922 record, but the initial production of 178,685 bbls. was 66,423 bbls. less than the year before. There were 232 more dry holes drilled last year than in 1922 and 15 more gas wells. The 1,640 oil wells completed in 1923 averaged 109 bbls. in initial production, while in 1922 1,463 oil wells completed yielded an average initial production of 168 bbls. per well.

Louisiana's Serious Decline

Louisiana, following its sensational spurt in 1922 when the Homer and Haynesville fields were under development was a pretty dull oil region last year. Only 478 wells were completed in that division and their total initial production was 19,184 bbls. This shows a drop of 587 in completions from the record of the year before and a 353,688-bbl. drop in initial production. There were 24 fewer dry holes, but an increase of 68 in the number of gas wells is indicated. The 203 oil wells finished in 1922 yielded an average initial production per well of 94 bbls., while the 338 oil wells completed in 1922 showed an average of 445 bbls. per well.

Gulf Coast Results

Notwithstanding a good demand for Gulf Coast grades of crude and an increased number of completed wells in that division in 1923, the initial production was decidedly lower than in 1922. The 1,626 completed wells of last year yielded 391,573 bbls. of first-day production, an increase of 108 in completions over the 1922 record, but a decrease of 159,367 bbls. in initial production. The dry holes numbered 133 more than in the previous year, and there were 28 fewer gassers. The 1,140 oil wells completed last year averaged 343 bbls. per well on the first day, while the 1,140 oil wells completed the year before were good for 434 bbls. average initial production.

Rocky Mountain Fields

An increase in field work is noted in Wyoming last year. There were 78 more completions than in 1922, but the initial production was 67,356 bbls. below the record of the year before. Eight more dry holes than in 1922 and 15 fewer gas wells are shown. In 1923 the 506 oil wells averaged 250 bbls. per well in initial production, while the 421 oil wells completed in 1922 average 401 bbls.

Montana was a great disappointment. It started off the year with bright promise and was expected to take its place among the important oil producing States as a result of its year's work, but the 248 completed wells, while an increase of 104 over the record of the previous year, yielded a total initial production of only 14,688 bbls., or 3,718 bbls. more than in 1922. There were 70 dry holes drilled in the State in 1923, 43 more than in 1922, and only 1 gasser, or 3 fewer than in 1922. The average initial production of the 177 oil wells last year was 83 bbls. as against 207 bbls. for the 53 oil wells in 1922.

East of the Mississippi

The eastern division, which includes New York, Pennsylvania, West Virginia and southeastern Ohio, and which is the oldest of the American oil fields, dating back to the very beginning of the industry, finished 4,525 wells last year, 395 fewer than in 1922. The initial production of 18,060 bbls. was 9,176 bbls. below the 1922 record. There were 141 fewer dry holes drilled, an evidence of the big falling off in wildcatting in that old territory. The gas wells numbered 847, or 208 more than 1922. The 2,907 oil wells completed in 1923 averaged a fraction more than 6 bbls., while 2,430 oil wells drilled the year before averaged 11 bbls.

The Central Ohio fields were chiefly characterized in 1923 by the increase in the average production per well over the year before. The field is largely a gas producing district. There was a great falling off in field operations, only 642 wells having been drilled there last year, a decline of 264 wells from the year before. The dry holes numbered 21 less than in 1922 and there was a falling off of 21 in gas wells, but the new produc-

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Big Decline in December Field Results

The Passing of Powell Largely Responsible for the Falling Off in New Production. Decline in Rigs and Wells Drilling

SUMMARY OF ALL FIELDS

Wells Completed

Fields—	Comp.	Prod.	Dry	Gas
Eastern	282	738	41	89
Lima	30	632	4	2
Indiana	13	497	6	0
Central Ohio	88	110	29	57
Kentucky-Tennessee	135	2,093	43	4
Illinois	16	158	5	1
Kansas	32	745	16	6
Oklahoma	277	27,795	95	36
North Texas	117	7,141	29	4
East Central Texas	117	80,187	37	2
N. Louisiana-Arkansas	95	12,380	15	11
Gulf Coast	55	7,975	19	2
Wyoming	51	10,258	8	4
Montana	17	595	6	1
Total December	1,325	151,304	353	219
Total November	1,450	546,275	340	214
Difference	125	394,971	13	5

Rigs and Wells Drilling

Fields—	Rigs	Drg.	Total
Eastern	151	308	459
Lima	6	37	43
Indiana	3	24	27
Central Ohio	38	118	156
Kentucky-Tennessee	8	209	217
Illinois	3	12	15
Kansas	46	134	180
Oklahoma	194	996	1,190
North Texas	73	203	276
East Central Texas	13	144	157
N. Louisiana-Arkansas	90	166	256
Gulf Coast	77	279	356
Wyoming	91	345	436
Montana	21	163	184
Utah	1	24	25
Mississippi	2	20	22
Alabama	0	11	11
Georgia	1	4	5
Florida	5	9	14
Total December	823	3,206	4,029
Total November	931	3,394	4,325
Difference	108	188	296

The full significance of the passing of the Powell Field, in Texas, is revealed in the December summary of field operations. East Central Texas, which had a total initial production of 398,628 bbls. in November, showed only 80,187 bbls. of first-day production in December, a falling off of 318,441 bbls. There was a decline of 394,971 bbls. in initial production in the total for all fields as compared with the November total. Oklahoma's 277 completions in December yielded about half as much new crude as the November completions registered. The Louisiana-Arkansas division also dropped off, the November initial production having been 40,438 bbls., while that of December was only 12,380 bbls. In the Gulf Coast fields a drop from 26,057 bbls. to 7,975 bbls. was indicated.

In new work at the close of December the 823 rigs represented a decline of 931 from the status at the close of November, while the 3,206 drilling wells were 188 fewer than the number at the close of November, a total falling off of 296 in new operations.

OKLAHOMA

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Washington-Nowata-Rogers	0	0	0	0
Osage	31	5,215	5	9
Tulsa	17	937	6	3
Okmulgee	26	4,370	12	2
Okfuskee-Hughes-Seminole-McIntosh	27	3,980	10	5
Muskogee-Wagoner	8	0	8	0
Creek	30	1,623	14	3
Pawnee	8	192	1	0
Payne	2	0	2	0
Kay	20	1,843	2	0
Garfield-Noble	36	5,793	6	0
Carter	38	3,537	7	2
Stephens-Cotton	20	305	10	4
Miscellaneous	14	0	12	2
Total December	277	27,795	95	36
Total November	239	52,900	89	28
Difference	38	25,105	6	8

Summary of New Operations

County—	Rigs	Drg.	Ttl.
Washington-Nowata-Rogers	0	0	0
Osage	35	126	161
Tulsa	15	21	36
Okmulgee	27	55	82
Okfuskee-Hughes-Seminole-McIntosh	31	90	121
Muskogee-Wagoner	3	16	19
Creek	20	83	103
Pawnee	4	34	38
Payne	1	9	10
Kay	10	115	125
Garfield-Noble	8	96	104
Carter	10	118	128
Stephens-Cotton	2	21	73
Miscellaneous	28	212	240
Total December	194	993	1,190
Total November	231	952	1,183
Difference	37	44	7

The general feeling of optimism that developed among producers during the month did not manifest itself in any material change in the number of new operations, the total of 1,190 for December being just 7 more than the figure for November. The increase of 44 in the number of drilling wells was offset by a decrease of 37 rigs, the December figures for the drilling wells being 996 and for the rigs, 194. This condition reflects rather accurately the attitude of the majority of producers who have been inclined to await more favorable conditions before starting any extensive new work. It is the general feeling, however, that a noticeable increase in operations may be expected shortly after the first of the year.

The 277 wells completed during the month of December represented a gain of 38 over November, but their total initial production fell from 52,900 bbls. to 27,795 bbls., a decrease of 25,105 bbls. This was due in large measure to the big slumps in Kay County, Creek County, and the district including the counties of Okfuskee, Hughes, Seminole and McIntosh. Kay County dropped from 13,859 bbls. to 1,843 bbls. during the month, and Creek County descended all the way from 8,079 bbls. to 1,623 bbls. The lack of new producers in the Wewoka Field was responsible for much of the loss in the Seminole district which brought in only 3,980 bbls. of new production in comparison with its 15,846 bbls. in November. Continued declines in all three of the major fields was a feature of the past month, both Tonkawa and Burbank slipping as steadily as Wewoka.

The 277 completions of the month included 95 dry holes and 36 gas wells, leaving 146 oil producers.

KANSAS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Butler	1	0	1	0
Montgomery-Wilson-Neosho-Allen	0	0	0	0
Miami-Franklin-Anderson	0	0	0	0
Greenwood-Woodson	13	340	7	0
Marion	0	0	0	0
Chautauqua-Elk	5	0	2	3
Miscellaneous	13	405	6	3
Total December	32	745	16	6
Total November	29	613	16	2
Difference	3	132	0	4

Summary of New Operations

County—	Rigs	Drg.	Ttl.
Butler	2	15	17
Montgomery-Wilson-Neosho-Allen	0	1	1
Miami-Franklin-Anderson	0	0	0
Greenwood-Woodson	25	41	66
Marion	8	4	12
Chautauqua-Elk	1	4	5
Miscellaneous	10	69	79
Total December	46	134	180
Total November	54	149	194
Difference	8	6	14

New production in the Kansas fields recorded a slight gain during December, if such a negligible amount of oil as that State's producers brought forth during the month of November can be used as a basis of comparison. Initial production in the Sunflower State had dropped so near the cellar that there was scarcely any direction for it to go but upward, although one week during the past month rolled by without recording a single completion.

The total number of December's completions was 32, representing an increase of 3 over the figures for the previous month. Dusters comprised exactly half of this total, and gassers subtract 6 more, leaving an even 10 producing oil wells brought to completion, all in the counties of Greenwood and Cowley. The total initial production of these 10 producers amounted to 745 bbls., 132 bbls. more than the initial production brought in during November. The dry holes were the same in number and the gassers increased by 4 over the previous month's total.

It is interesting to compare these figures with the record of the Kansas fields for May of this year, when 11,182 bbls. initial production came from 198 completions, of which 62 were dusters and 5 were gassers.

New operations went further toward the zero point during the month, the report showing only 46 rigs in comparison with 54 for November. The drilling wells in the State decreased by 6 also, leaving only 134 for December, bringing the total of new operations down to 180, in comparison with 194 for November. A great many of the wells reported as drilling are still shut down.

With the intense interest that the new wildcat well in Russell County has created, coupled with the bullish tendency that prevails throughout the oil industry in the Mid-Continent, many observers expect to see considerable increase in activities during the coming month or two, especially in the western part of the State.

EAST CENTRAL TEXAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Navarro	95	79,942	13	1	3	80	83
Limestone	20	245	12	1	0	4	4
Miscellaneous	2	0	2	0	10	60	70
Total Dec.	117	80,187	27	2	13	144	157
Total Nov.	136	398,628	18	0	42	216	258
Difference	19	318,441	9	2	29	72	101

The Powell Field in Navarro County, Texas, blew up in December. In the number of completed wells, the total of initial production, the average initial production per well and in rigs and wells drilling it showed a tremendous falling off from the record of previous months since mid-summer. In Navarro County there were 95 completions in the period covered by the December oil report with initial production of 79,942 bbls. There were 13 dry holes and 1 gasser. The November showing was 122 completions, 398,628 bbls. in initial production, and 4 dry holes. In October the district showed 167 completions, initial production of 405,333 bbls. and there were 17 dry holes.

Navarro County at the close of the report had 3 rigs and 80 wells drilling, while at the close of the November report it showed 31 rigs and 129 wells drilling, a total of 160 operations, and at the close of the October report 60 rigs and 135 wells drilling, or 195 operations.

It is safe to say that the January report will show that Powell, as well as Currie, has been drilled up, with the exception perhaps of a few wells that are left over, just as there are a few still carried on the list in the Mexia and other Limestone County districts, which have long been shut down.

In production Powell was falling daily at the closing days of the month and when this report was filed, December 24 it had dropped to about 80,000 bbls., its high mark having been 354,893 bbls. on November 13.

The December report includes the completion report on a number of wells in the Mexia Field. Only one well classified as drilling remains in that field and it has long been shut down.

NORTH LOUISIANA-SOUTH ARKANSAS

Summary

District—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Smackover District, Union Co.	25	6,410	4	2	32	55	87
Ouachita Co.	35	5,045	2	1	27	44	71
Stephens Dist., Columbia and Ouachita Cos	1	25	0	0	2	0	2
Bellevue	10	340	0	0	4	8	12
Caddo	3	100	0	0	3	5	8
Claiborne	2	0	2	0	2	0	2
De Soto	0	0	0	0	0	1	1
Red River	2	0	1	0	0	2	2
La. Wildcats	12	0	4	8	12	34	46
Ark Wildcats	5	460	2	0	8	17	25
Total Dec.	95	12,380	15	11	90	166	256
Total Nov.	152	40,438	29	18	94	171	265
Difference	57	28,058	14	7	4	5	9

Webster Parish continues to lead in interest during the month of December. The completion of the Oil Fields Gas Co.'s No. 1 Merritt, Section 14-21-10, 14 miles west of the Homer Pool seems to have established the proof of oil in commercial quantities inasmuch as storage is being built adjoining this well which was contracted to be taken over by the Louisiana Oil Refining Co. in case it came in as an oil producer.

A very heavy decline in production is shown during the month with Union and Ouachita Counties leading as producers, the Ouachita County production being principally credited to the Louann area. There was a drop of more than 25 per cent in the number of completions and over 65 per cent in total new production for the month throughout the entire field. Union County showed heaviest loss dropping from nearly 31,000 to 6,410. The gain in Arkansas wildcats is entirely due to Nevada production. Gas production was very greatly diminished.

GULF COAST

Summary of Field Operations

District—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Batson	1	0	1	0	1	2	3
Blue Ridge	1	60	0	0	0	2	2
Big Creek	2	0	2	0	0	4	4
Damon Md.	2	700	1	0	0	3	3
Goose Creek	4	800	2	0	2	9	11
Humble	3	40	0	0	0	9	9
Hull	5	1,400	1	0	4	17	21
Jennings	1	50	0	0	0	0	0
Markham	0	0	0	0	0	2	2
Orange	2	125	0	0	7	19	26
Pierce Jct.	2	1,000	1	0	0	2	2
Spindletop	1	15	0	0	0	1	1
Saratoga	0	0	0	0	0	2	2
Sour Lake	1	70	0	0	0	3	3
Somerset	0	0	0	0	0	6	6
Vinton	5	330	2	0	1	5	6
W. Columbia	1	0	0	0	0	2	2
Luling	6	2,800	2	0	6	21	27
Laredo Dist.	6	475	1	1	4	11	16
Milam Co.	5	50	1	1	1	9	10
Miscl.	7	60	5	0	51	149	200
Total Dec.	55	7,975	19	2	77	279	356
Total Nov.	90	26,057	16	4	84	278	362
Difference	35	18,082	3	2	7	1	6

Unusually heavy rains during the month of December tended to curtail operations in the Coastal Pools and the light gravity fields of the southwest, resulting in the smallest number of completions and the lightest new production since the strike of the field workers several years ago.

The new production aggregates only 7,975 bbls., a loss of 18,082 bbls. when compared with the November figures. Of the total the Gulf Coast pools furnished 4,650 bbls. and the Luling, Laredo districts and the Milam County shallow sands 3,325 bbls.

The Hull Pool makes the best showing in the Coastal Belt with 1,400 bbls. compared with 3,050 bbls. new output last month. The Pierce Junction Pool shows a well with 1,000 bbls. initial output, but it fell off rapidly to an average of 300 bbls. per day. The Luling light gravity field developed 2,800 bbls. new pro-

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Sensational Rise in Group 3 Gasoline

Combination of Tank Wagon and Crude Advances Brings Large Price Boost. Refiners Having Difficulty in Securing Crude Supplies

By C. O. Willson

A general gasoline tank wagon advance of 2 cents in 11 States of the Middle West comprising what is commonly known as the Standard of Indiana and the Standard of Nebraska territories, a 2- to 4-cent advance in Oklahoma, coupled with higher crude prices in the same State and adjoining fields as posted by several of the major crude buyers during the past week, combined to bring the Group 3 refined market one of the most active seven-day periods of the year. The fact that the changes in tank wagon and crude prices had been generally expected for several days previous to their realization, did not minimize the effects which up to this writing had exceeded the expectations in several respects of most market observers.

When both tank wagon and crude advances occur within a period of a few days it is not easy to gauge the reaction in refined markets for several days following. It is unusually difficult in the present situation and it will probably be the end of the week before the refined market developments in full can be determined and not then provided additional tank wagon and crude price changes serve to again disturb the situation.

Sensational Advances

Up to this writing, however, it can be said on the authority of veteran marketers that the Group 3 market during the past week has witnessed one of the most sensational advances in gasoline prices at the refineries in its history. A week ago New Navy gasoline—the barometer of all gasoline products—could be purchased in Group 3 for 7½ cents. The bottom price for immediate shipment is now 9 cents and it is probable that the asking price of a majority of the refiners is above that quotation with the largest refiner in the Group—Cosden & Co.—quoting 10 cents to the trade for immediate shipment. Other straight run products, together with blends and natural gasolines have taken a similar advance in price. The remaining products have not experienced so great an increase although fuel oil is 5 cents higher with several other products moving at slightly higher prices than they were a week ago. A further development of importance lies in the action of additional refiners who are refusing to quote for immediate shipment or future delivery on one or more products.

Gasoline prices which have been steadily advancing for over a month began to ascend more rapidly when on Thursday of last week The Texas Co. announced several important crude changes, including a 15- to 40-cent advance in Oklahoma crudes. Although The Texas Co. is not a large competitor of Group 3 refiners in the purchase of crude supplies, it was felt that its crude advance assured similar action on the part of all major purchasers which would mean correspondingly higher prices to the independent refiners. The Magnolia Petroleum Co., the Empire Pipe Line Co. and at least two smaller companies have since made similar advances. However, the Prairie Oil & Gas Co., Sinclair Crude Oil Purchasing Co., and the companies which follow their lead have not raised their prices and this is necessary before it can be stated that crude prices to the independent refiners in Group 3 have been generally advanced.

Another Bullish Factor

On Saturday another bullish factor developed when the tank wagon changes previously explained occurred. This brought an overnight advance of from 1 to 2 cents in the gasoline quotations of several refiners. With both a tank wagon and crude advance within a period of a few days and a generally optimistic feeling existing throughout the oil industry, it is not surprising that the refiners felt justified in advancing their prices.

The actual movement of gasoline on the open market due to the advancing market, has been below the average for two weeks, and for the past three days, due in part to the New Year holiday, has been reduced to a minimum. The weekly report of the Western Petroleum Refiners' Association, covering all Mid-Continent refinery operations for the week ending December 22, shows an increase of approximately 3,000,000 gallons in gasoline stocks over December 15 and slightly over 1,000,000 gallons of this increase comes from the refiners of Group 3. Since the reports for the two weeks are based on the operations of the identical plants, this is positive evidence that refiners are not moving their usual quantities with their higher prices.

Real Test to Come

In this connection it is probable that the real test of the strength of the present gasoline price structure in Group 3 and the entire Mid-Continent Field will come in the near future. The Prairie Oil & Gas Co. and other major purchasers, which have not met The Texas Co. and Magnolia Petroleum Co. prices, are expected to take some action within a few days. If they advance their prices, refiners will again advance their gasoline prices arbitrarily or at least continue firm in their present quotations. But there is certain to be a lull of a few days in the tank wagon and crude changes within the next week or 10 days and it will then be possible to gauge actual market conditions as they apply to the gasoline situation.

There are still buyers who do not believe that present gasoline prices can be maintained, although they concede that the position of the seller is becoming stronger daily, due to the crude and tank wagon advances. They point to the undisputed fact that the Group 3 refining industry and that of the Mid-Continent area generally is not having its usual gasoline movement with little decrease if any in daily refinery runs. Further in contrast to December, which was exceedingly favorable for gasoline consumption from the standpoint of weather, January opened with cold and stormy weather throughout the area in which Group 3 refiners dispose of their gasoline output. With no decrease in gasoline output and a large decrease in consumption these buyers feel that there will be at least a temporary lull in the present bullish situation and they will be able to buy under present quotations.

Many "Ifs" in Market

There are so many "ifs" in the market situation at present that few market observers will risk a definite prediction. The possible development just explained is, however, conceded by some refiners with others predicting that prices will show a consistent advance over the remainder of the winter, regardless of temporary declines in consumption.

Inquiry among several representative refiners during the past week as to what they thought of the future trend in gasoline prices revealed some difference of opinion, although without exception they felt certain that the general trend would be upward when considered over the next six months. The larger concerns are largely taking the same position. As to the larger refiners, the opinion of one sales manager is probably representative. This sales manager stated that he saw nothing to prevent a gradual advance in both crude and tank wagon prices. Definitely expressed, he saw no reason why the average crude prices in Oklahoma should not be at least $2 by April or May, with a tight refined market, which would mean that New Navy gasoline would be selling in excess of 15 cents a gallon at the refinery, with the usual price relationship existing between it and the Standard of Indiana tank wagon structure. He said that the advance to these prices would be gradual with the largest increase possible not materialising until early spring.

May Store Surplus

Asked what effect unfavorable weather would have on this situation this sales manager said it would have none in so far as his company was concerned. With higher prices assured, he said his company felt safe in storing whatever surplus might accrue over and above the needs of regular customers and for that reason would be practically out of the spot market until spring. Its market importance is obvious. If these larger companies are in a position to stay out of the open market, then the price structure for the smaller concerns is more secure. In many cases refiners are not in position to store large quantities of gasoline or any other product. What they fail to sell this week or next, of their current output, must be disposed of in the near future. But it is apparent that these companies will have a far better situation if their large competitors over the season of minimum consumption do not actively compete with them.

If this situation actually obtains during the next month, it would seem that present gasoline prices can at least be maintained. As to the market importance of a seasonal decline in consumption, it is more imaginary than real.

There exists among many of the trade a feeling that when cold and otherwise unfavorable whether strikes in the Middle West, the demand for New Navy gasoline automatically ceases. Government figures do not bear out this feeling. The Bureau of Mines monthly reports in fact show that while consumption varies somewhat with the seasons a month to month difference sufficient to have any great market importance does not exist. In brief, considered for the entire United States unfavorable weather for brief periods in one section is largely offset by increased consumption in others so that the normal movement is not seriously disturbed.

Crude Situation

An increasing number of independent refiners are having difficulty in securing an adequate crude supply. Complaints voiced this past week included several of the larger plants. These concerns are endeavoring to secure their crude supply without the payment of premiums. They state that they find premiums being offered by other concerns with the larger purchasers actively seeking new connections. In some fields it is known refiners have found it practically impossible to secure new crude supplies regardless of the price, everything being tied up with contracts. This situation has also been a factor in bringing about the higher gasoline prices and indicates that the larger purchasers will soon find it necessary to advance their posted prices.

Gasoline and Naphtha

The market in regard to New Navy has been explained. It was noticeable a week ago when The Texas Co. advanced Oklahoma crude that buyers who had been out of the market awaiting lower prices quickly endeavored to buy new supplies. However, the sellers were

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REFINED MARKET BAROMETER

Additional crude advances, affecting all fields except those of Wyoming, Montana and California, together with gasoline tank wagon price increases in several large consuming areas were reflected during the past week in generally higher prices for refined products. Gasoline prices at the refineries advanced in all areas with a large overnight increase in the refining centers of the Middle West and Southwest. Cold weather extending over a large part of the United States for several days is expected to result in a decreased demand for gasolines, but confidence is expressed that present advancing market will be maintained. Strong demand for kerosene reported from all areas with many refiners refusing to sell in anticipation of higher prices. Fuel oil demand exceeds supply in most areas and prices have been generally advanced. Neutral oil price advance in the East and Gulf Coast areas expected to become general within a few days.

Mid-Continent—Crude advances in all fields by one or more of the major purchasing companies, coupled with important tank wagon advances, resulted in higher prices on practically all refined products with the exception of neutrals and kerosene and these products were also advanced by a few plants. Gasolines of all grades advanced from 1 to 2 cents with many plants boosting their prices so that they were out of the spot market. Fuel oil prices were advanced from 5 to 10 cents in all areas. Gas oil prices were either firm or advancing. Natural gasoline advanced with practically no Grade A available for spot shipment. Kerosene prices generally firm. Improved demand for distillates with high prices prevailing.

Atlantic Seaboard—Markets generally firm with higher prices prevailing for lubricating oils, wax and several grades of gasoline. Believed that tank wagon markets in the East and Southeast will be advanced by the middle of the month. Demand for kerosene strong with higher prices probable. No important changes in other products.

Pennsylvania—General improvement in all products. Crude advances which now total 65 cents for Pennsylvania grades have been reflected in higher prices for all refined products. Strong demand for neutrals continues with all grades advanced in price. Reflecting a strong demand 600 steam refined was advanced 2 cents during the past week. Neutral stocks low with practically all the large buyers in the market. Fuel oil demand fair with an increase in demand expected as soon as mills resume operations. Wax very scarce.

Chicago—Crude and Standard of Indiana tank wagon advances unsettle market with comparatively little trading on the spot market. Cold weather general throughout the Chicago territory expected to be reflected in a decreased dmand for gasolines. All grades of gasoline higher. Fuel oil demand strong and prices higher. Kerosene steady. Higher prices for lubricants expected.

Gulf Coast—Advance in crude prices resulted in all zero cold test oils being advanced about 1 cent a gallon by a majority of the refiners. Other crude advances expected and these will probably be followed with higher prices for refined products.

Morgan Mentioned As Possible Buyer Of Marland Shares

E. W. Marland, president of Marland Oil Co., has authorized the following statement:

"At a meeting Friday, December 8, 1923, of the board of the Marland Oil Co., the president was authorized to dispose of any or all of the unissued treasury stock of the Marland Oil Co. to a prominent New York-banking house."

Wall Street understands that the purchaser of a large block of Marland Oil treasury stock from the company, authorization for the sale of which was given President E. W. Marland by directors, is one of the largest international banking houses.

The amount of stock at present involved is understood to be about 200,000 shares at something under present market price; also that another and larger block may be purchased by the same interests later. It is expected that the new banking interests will be represented on the Marland board.

In informed quarters it was stated that one or two details remain to be closed before consummation of the sale and details can be definitely announced.

From another source it was said control of the Marland company expected to pass to a New York banking syndicate Thursday, January 3.

Sale of the 750,000 unissued shares of the concern's 2,000,000 authorized shares of stock was expected to be announced upon the arrival in New York of E. W. Marland.

Mystery shrounded the identity of the purchasing syndicate, variously reported as J. P. Morgan Co., Kuhn, Loeb & Co., and the Standard Oil Co. of New Jersey. The latter denied it was involved in the deal. At Kuhn, Loeb & Co., it was stated nothing was known of such a sale. Morgan & Co. refused to either confirm or deny the report, saying a statement might be issued later. The deal was to be jointly executed by Potter & Co., and W. J. Wollman & Co., brokers, representing the Marland interests. At Potter & Co. is was stated the sale would put the Marland Co. on a financial footing never attained by an independent concern.

"The Standard Oil Co. is not involved," W. E. Fitzgerald of Potter & Co. said. "The banking syndicate has acted for itself and is acquiring the stock as an investment and not for speculation. "This company has only once before purchased in oil. It is acquiring Marland stock only after exhaustive investigation."

Fitzgerald pointed out that while 750,000 shares would not give an actual control, such a block of stock would in reality be control. W. J. Wollman said: "The sale means big things for the Marland company. The interests coming in are the most substantial. They are not investing as a speculation to juggle the stock on the market, but are buying as a private investment."

Recently directors of the Marland company offered stockholders in the Marland Co. of Mexico an exchange of one share of stock for eight. This offer, now being executed by the Guarantee Trust Co. of New York, has until January 15 to run and after completion will make the two concerns virtually one."

TAKES OVER WHITE OIL CORP.

NEW YORK, Dec. 29.—The Registrar & Transfer Co. has filed a certificate of incorporation in Delaware for the United Central Oil Corp., with an authorized capital of 60,000 shares of preferred stock of $25 a share par value and 600,000 shares of common stock without par value. The company was organized in accordance with the reorganization agreement of the White Oil Corp. and will take over its assets.

RESTRAINING ORDER ASKED IN OSAGE SALE

PITTSBURGH, Pa., Dec. 31.—An order was issued in Federal Court today restraining E. N. Gillespie, director of the Guffey-Gillespie Gas Products Co. from assigning oil leases obtained by him as trustee for the corporation at the Osage sale in Oklahoma in December 1921, pending disposition of an equity percentage.

Testimony was introduced at a preliminary hearing to show that Joseph W. Gerard, former ambassador to Germany, the Samsoset Oil Co., and other undetermined corporation have since acquired an interest in the leases and that Gillespie claims to hold them for the other interests as well as the Guffey-Gillespie company.

Joseph F. Guffey, president of the company, held that Gillespie should be required to assign the leases in their entirety to the corporation and then have assignment made to the other interests.

Powell Production Up to 91,000 Bbls., With Wells on Pump

CORSICANA, Tex., Dec. 31.—The falling off in daily production in the Powell Field was arrested last week when operators were enabled to pump wells on lesses that had quite producing. Production dropped to 75,000 barrels a day before it began taking an upward trend about the middle of the week and by Friday, 85,000 barrels a day was being turned into tankage and on Saturday, 91,100 barrels was produced. The average for the week was 81,000 barrels. No completions were reported in the course of the week and no new work was started. The holiday season following a period of very bad weather, during which nothing was done in the field that could be put off, has delayed developments. Most of the defined field has been drilled up.

DUTCH-SHELL VIENNA DEAL

The Royal Dutch-Shell group, it is reported, will establish a company, sharing equal ownership with Florisdorfer Oil Refinery of Vienna, to supply the latter with crude oil, but acquires no interest in the Florisdorfer company.

OKLAHOMA-KANSAS

Pipe Line Statement for November

Runs

Company—	Month	Daily Av.
*Prairie Pipe Line Co....	3,390,000	113,000
Gulf Pipe Line Co.	1,119,929	37,331
Texas Pipe Line Co. of Okla.	536,614	17,887
Magnolia Pet. Co.	910,574	30,352
Empire Pipe Line Co.....	761,934	25,398
Cosden Pipe Line Co.....	608,431	20,281
*Sinclair Pipe Line Co....	615,000	20,500
*Other lines	6,810,000	227,000
Total November	14,752,482	491,749
Total October	13,728,260	442,848
Difference	1,024,222	48,901

Shipments

Company—	Month	Daily Av.
†Prairie Pipe Line Co....	2,650,566	88,385
Gulf Pipe Line Co.....	886,976	29,566
Texas Pipe Line Co. of Okla.	387,276	12,909
Magnolia Pet. Co.	720,799	24,026
Empire Pipe Line Co.....	751,514	25,050
Cosden Pipe Line Co.	647,170	21,572
†Sinlair Pipe Line Co....	1,181,140	39,371
Other lines	6,000,000	200,000
Total November	13,225,241	440,839
Total October	13,302,342	429,108
Difference	77,101	10,731

Stocks

Prairie Oil & Gas Co.....	23,500,000
Prairie Pipe Line Co.....	1,750,000
Gulf Pipe Line Co. & Gypsy Oil Co.	9,121,909
The Texas Co.	7,038,592
Magnolia Petroleum Co.	8,165,831
Empire Pipe Line Co.	2,872,447
Cosden Pipe Line Co.....	3,338,901
Carter Oil Co.	17,922,771
*Sinclair Crude Oil Purchasing Co.	30,325,000
Other lines	4,800,000
Total November	108,835,451
Total October	108,071,221
Difference	764,230

Note—Stocks do not include approximately 7,000,000 bbls. of crude oil held in storage on private tank farms and leases.

Cosden and Whitney Organize Company To Test Venezuela

NEW YORK, Jan. 1.—Because of constantly declining output of oil in Mexico and in certain fields of the United States, preparations are under way by leading American oil interests to develop production in Venezuela, says the Wall Street Journal. Vast areas have been taken by American interests who believe Venezuela will be the source of much of the world's supply of oil for many years. Development of Venezuelan oil properties has become additionally necessary because of the outlook of greatly increased demand for oil in 1924.

Existence of oil in large quantities in Venezuela has been proved in several areas, and the problem in connection with the development is merely one of marketing. This problem is not difficult. Pipe lines and other distributing facilities are planned to market production on a large scale.

Most of the exploration work in Venezuela to date has been done around Lake Maracaibo and numerous gusher wells have been brought in, some of them capable of producing as much as 50,000 to 75,000 bbls. of oil a day. The oil is a better quality than Mexican oil.

J. S. Cosden, Payne Whitney, and associates controlling a large area of prospective oil lands, have organized the Lago Petroleum Co., which will develop the properties. H. N. Greis, a director in Cosden & Co., is president.

In the last few years this group has selected what are regarded as some of the most promising oil lands, including the Lake Maracaibo concession. Other areas have been taken in the State of Monagas.

In contrast with political conditions in Mexico, Venezuela is encouraging the development of its oil resources. Under the Venezuelan law the oil lands are obtained under concessions from the Government and in consequence are protected by the Government. The terms are favorable. In Mexico the oil men secured from individuals, rights later claimed by the Government. That caused most of the difficulties under which oil men have operated in Mexico.

The Lago company in its lake concession controls a total of 2,290,000 acres, covering the entire bed of Lake Maracaibo, except strips along edges of the lake at certain points.

There is an estimated developed production in Venezuela at present of 222,000 bbls. a day, much of which has been developed by the Venezuelan Oil Concessions, Ltd., the first oil company in Venezuela. In 1907 it obtained a concession from the Castro administration. Since then various concessions have been granted, until today practically all the leading oil companies are operating in Venezuela. These include Standard Oil of New Jersey, The Texas Co., Pure Oil. Union Oil of California, Gulf Refining, Atlantic Refining, Anglo-Persian, Maracaibo Oil Exploration, Sun and Royal Dutch. General Asphalt Co. has an interest in certain of the Royal Dutch properties.

ALMA GAS WELL FIRE

FORT SMITH, Ark., Jan. 1.—Dynamite and steam are to be employed to check a gas well fire in the Alma, Ark., Field, which has been burning since last Friday.

A 10-inch pipe line has been laid from the mouth of the burning well to a point 100 feet distant and dirt bags placed about the well mouth to divert the flames into the 10-inch pipe. With these preparations completed, it is planned to dynamite a 5-inch casing which protrudes 25 feet above the ground and through which the flames are spouting and, simultaneously, to send a stream of steam through the 10-inch pipe, which is expected to snuff out the fire at the ground level.

KENTUCKY PRODUCTION BY FIELD IN NOVEMBER

LEXINGTON, Ky., Jan. 2.—The production of crude petroleum in Kentucky during November, 1923, is given as follows:

County—	Bbls.
Allen	31,071.45
Barren	4,624.90
Bath	746.77
Boyd	87.90
Cumberland	433.98
Estill	44,336.50
Floyd	775.96
Hancock	3,155.83
Jackson	161.07
Johnson	98,795.13
Knott	169.90
Lawrence	38,611.16
Lee	191,420.90
Magoffin	108,746.92
McCreary	347.91
Menifee	798.80
Monroe	1,124.55
Morgan	784.76
Ohio	2,140.85
Owsley	530.76
Powell	25,311.97
Simpson	1,647.05
Warren	51,162.00
Wayne	10,487.29
Wolfe	4,824.52
Total	622,298.82
Daily average	20,743.28

Cheaper Gasoline Cry by La Follette Framing New Bill

WASHINGTON, D. C., Dec. 30.—Legislation to lower the cost of gasoline will be pressed for passage in Congress as soon as the holidays are over.

Senator La Follette is drawing up a bill, it has been learned.

La Follette would "reorganize the big oil and gas companies so that present wastes would be eliminated and the Government would have supervision over prices."

The La Follette bill is being based on the "evidence" at the hearing conducted by the Senate Manufacturers' Committee last winter.

NEW SHALLOW SAND IN CORSICANA FIELD

CORSICANA, Tex., Jan. 1.—A shallow well has been completed on the Ramsey tract by the Buttram-Tidal Oil Co., reported good for about 200 barrels of 37 gravity oil a day.

The depth at which the oil has been encountered is 1,610 feet. This is the first shallow paying well to be completed in the deep field area and is the opening up of a widespread shallow drilling campaign. During all the deep drilling shallow sands that contained commercial quantities of oil were encountered at various depths. The shallow sands lie from 900 to 1,800 feet below the surface.

The E. L. Smith Oil Co. is drilling a shallow offset to the Buttram-Tidal new well. Other companies are only awaiting better weather to start shallow tests on the various leases covering the deep field area.

GRAY WILL ADDRESS OKMULGEE OIL MEN

OKMULGEE, Okla., Jan. 2.—W. H. Gray, of Tulsa, president of the National Association of Independent Oil Producers, will address the members of the Okmulgee District Oil and Gas Association at the weekly luncheon meeting of the association, at the Hotel Parkinson, at noon, next Saturday, January 5. Mr. Gray is a nationally known leader of the independent oil men and it is announced that he will have a message worth hearing.

NO EAGLE-PENN MEX CONTRACT

PITTSBURGH, Pa., Dec. 31.—L. W. Young, Jr., president of South Penn. Oil Co., which owns the Penn.-Mex. Fuel Co., says: "We have made no recent contract for the sale of Mexican crude." This statement was in reply to a question as to whether Penn.-Mex. Fuel had signed a contract for the sale of crude oil to Mexican Eagle Oil Co.

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THE HAZARDS OF DRILLING

The surprise of the week in California is a striking example of the hazards of the seeker for oil. A 2,500-bbl. producer was brought in on the outskirts of an oil field which three years ago was abandoned as small and not capable of commercial production. In fact, the company which has completed the new producer is reported to have spent over a million dollars developing this acreage and until now securing but five small wells whose total production has never been much over 300 barrels a day. All of these, too, were very costly.

Several other companies drilled in the immediate vicinity to around the 3,900-foot mark without showing and withdrew. Then a year and a half ago the successful company resumed drilling. Although the test was marked, it is reported, by practically all the difficulties experienced in drilling, the pay was finally struck at 4,265 feet, making an exceptionally large flow of unusually high gravity oil with a gas pressure of about 750 pounds.

There is a certain irony in the report that the successful operator who had been generally criticized for his persistent efforts in an area long condemned by several geologists and presumably disproved by tests is now being showered with congratulations for his discovery of a new deep zone. Yet the history of the search for petroleum shows many such incidents where persistence in the face of every discouragement won through, relieving the background of vastly more numerous failures where even equal persistence went unrewarded.

It is these picturesque accidents of fortune where success crowns efforts despite all obstacles, that loom largest in the public eye and mind. The more than a million spent in developing the area, the losses sustained by those whose tests did not go deep enough or failed to get a showing, are ignored. Yet these are more familiar to the oil world, which knows that all the money received for petroleum falls lamentably short of the sum sunk in the effort to find it. If the general public were better informed of the hazards and losses attendant upon the finding of oil there would be less disposition to listen to the assaults of politicians and demagogues upon the industry.

A DANGER TO BE AVOIDED

The advances in crude prices translate hope into reality and mark the beginning of what is believed will be a new period of prosperity for the oil industry.

A similar situation in the oil business has never before prevailed because of many new conditions, not least being the enormous volume of consumption that has been pyramiding for two years with every indication that the consumption curve will continue to deflect sharply upward. The impounded force of the unprecedented demand is bound to work a powerful influence on every branch of the industry, unless the drill should find new streams to replenish the now fast receding tide of production.

But there is a danger spot to be avoided. Along with the disappearing flood of overproduction will go the ruinous prices for petroleum products made necessary as the result of many a battle for commercial existence. Stocks of all kinds, manufactured and crude, were slaughtered and sacrificed, right and left, to raise money to tide over the period of depression. The country at large enjoying general prosperity had no conception of the conditions in the petroleum industry. The abnormally low price structure for crude and refined oils, contrasting with high general prices, was the natural effect of phenomenal events in the oil business. By the laws of economics we know that these prices cannot longer stand. No commodity can for long be sold for less than its cost of production.

It is exactly this necessity for advancing petroleum prices, if the industry is to continue to function and the oil to supply the demand is to be found and furnished, that the general public, the consumer of our products, needs to know. Advancing prices are usually resented, human nature being what it is.

The fact that the public has been getting gasoline for less than bottled water sells for has been popularly accepted, not as an effect of bankrupt conditions in the oil industry, but as the result of agitation by a few public officials and politicians. These agitators will no doubt seize the increasing of prices as a text for a new crusade against the oil industry. And unless the public is informed promptly of the necessity for these advances we shall be in for another period of political persecution and renewed agitation for restrictive legislation and Governmental action.

Opposition in Congress and in the State Legislatures has been widely anticipated. This unfriendly attitude of the law makers and the public has been the subject of serious consideration and discussion among oil men for months. And the reason generally agreed upon for it is the fact that the industry has never told its story; has never presented its case to the people.

In all the world there is no court, no judge, no jury so manifestly equitable as the great tribunal of the American public. And since the oil industry has a cause that is most fair and just, it should, in its own selfish interest, lose no time in placing in the hands of the people the fullest possible information relating to every phase of the business.

The consumer is, after all, an integral part of the business. His moral, economic and psychological position must be given full consideration for its effect upon the market and the whole industry.

As the situation now stands it is utterly deplorable how little the average American knows about the oil business. He has never seen an oil derrick, an oil tank, a refinery. He knows practically nothing about the methods of drilling, its costs, its hazards, the methods of transportation or refining. He has heard all about the "millions made in oil" but nothing about the billions lost in it. He has no conception of the industry as a great business organization swayed by periods of fluctuating costs the same as any other.

To the ordinary man the oil business is only a great adventure with a pot of gold at the end of the rainbow. And for this misunderstanding the industry itself is largely to blame. It has neglected, if not disdained, to take the public into its confidence, to show the facts as they are. Worst of all, embitterments within the industry between one element and another, one branch and another, have led to the utterance of charges and counter charges that have been welcome ammunition to the self-seeking foes of the industry in politics and public positions.

These advances in prices are known to every oil man to be absolutely necessary to enable the industry to continue in business, to say nothing of meeting the changed order of things caused by the slump in production and the continual rise in demand. Any customer in any business will be less resentful of increased cost if frankly and convincingly shown the necessity for it. Common sense will tell him it is better to pay more and get what he needs than to demand a price that will bankrupt producers and reduce the supply of the product.

This is the story the industry should spread before the people. The necessity was freely admitted at the session of the American Petroleum Institute in St. Louis, but nothing was done about it. But it may not be too late. A representative meeting of live, conscientious willing workers should be called as soon as possible and plans adopted for immediate action along this line. There is no greater work that could be done and no greater service rendered by the Institute than placing the industry right with the American public.

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BRADFORD, PENNA.

Oil Securities Continue Upward Move

Slight Reaction in Some But Mostly Fractional, While Several Shares Attain New High Points for the Year Just Closed

By N. O. Fanning
Room 525 No. 30 Church St., New York

NEW YORK, Dec. 31. — Oil stocks continued to rise during the past week, many new high marks on the upward movement being reached. There was a slight reaction in some issues, but for the most part fractional. Standard Oil of California reached the year's high point at 64⅛, while Pacific Oil, in which it has a substantial interest, bested the year's previous high by more than three points. Other strong features were Houston Oil, which touched 72, Marland Oil at 39, Pure Oil at 25 and Standard Oil of New Jersey at 40.

In the Standard Oil group Magnolia Petroleum was one of the most active stocks, advancing to 158, as against a low for the year of 123 and a high of 166. Vacuum Oil passed the previous high when it advanced to 58. Many other Standard Oil issues have registered spectacular advances, with a good part of the year's losses already made up.

The Oil and Gas Journal's average made a new high on the upturn at 52.28 on December 24, marking a continuation of the advance which started October 30. The average has now advanced more than 10 points and has made up for about half of the loss which occurred between March 6, when the average stood at 62.17, and September 18, when the year's low of 41.43 was established. This rise is of particular significance in view of the extremely pessimistic utterances which were made only last fall regarding the ability of the oil business to "come back."

Profit Taking Expected

On top of a sustained rise in oil stocks such as that which has occurred, a temporary decline due to profit-taking would not be a surprising development in the near future. There is also the possibility that the rise may have been a little overdone, as is often the case in rapid changes in stock quotations, just as the selling was doubtless overdone earlier in the year. Oil stocks have now advanced fully two months with scarcely a break.

Oil Outlook Bright

All indications point to a general advance in crude oil prices. The continued decline in crude oil output has been highly encouraging. Stocks of crude oil are still large, but whether they are too large in view of this decline and the possibilities of 1924 consumption is a doubtful question. Refinery stocks of petroleum products are not much larger than a year ago at this time. The bulk of the storage accumulation has consisted of crude oil, in fields, tank farms and at refineries. It is not entirely certain, either, that crude oil output will continue to decline much further.

The outstanding development in 1924 will probably be a readjustment in the price of both crude and refined on an equitable basis from the point of view of the operation of the oil business. All authorities agree that prices in 1923 have been altogether too low from the viewpoint both of producer and consumer.

Interest in Venezuela Gains

Interest in Venezuela oil developments has increased considerably of late. Many large companies are reported preparing to plan active drilling campaigns on their acreage in that country during 1924. The Gulf Oil Corporation has purchased a lease from the Maracaibo Oil Exploration and is expected to begin development of it in the near future. British Controlled Old Fields, which has a large concession in Venezuela being developed in conjunction with the Standard Oil Co. of New Jersey, is reported to have sent a large crew of drillers to Venezuela from Canada recently. The Dutch-Shell group, which is said to control some 60 per cent of the favorable acreage in Venezuela, is expected to increase its output and transportation facilities next year.

Colombia is also a country from which much in the way of oil is expected next year. Interest here centers largely in the operations of the International Petroleum Co., Ltd., Carib Syndicate and other concerns which are interested in the development of oil there. International Petroleum should be able to export oil from Colombia in large quantities within one year, or perhaps less, if there is need for it.

Middle States Oil

The board of directors of the Middle States Oil Corporation at a special meeting Thursday authorized the company to take over approximately 62,000 shares of stock of the Southern States Oil Corporation bought on the New York Curb market for the account of C. N. Haskell, chairman of Middle States Oil, former Governor of Oklahoma, and the Unity Securities Corporation. The stock of the Southern States Oil Corporation was stricken from trading on the Curb prior to the calling of the meeting, when the price of its shares advanced from $30 to $33 per share.

Middle States Oil stock, which had advanced to above 7, dropped to 4⅞ and then recovered to 6. Southern States Oil stock was reported to have been traded in over the counter today at $10 per share.

NEW YORK STOCK EXCHANGE—LIST OF ACTIVE STOCKS

No.	Stock	Par	§Dividend Rate	Closing Quotations Dec. 31	Dec. 24	Range 1923 High	Low
1.	Associated Oil	25	6	29½	29¼	29¼	29½
2.	Atlantic Refining, common	100	4	132½	126	160	98¾
3.	Barnsdall "A"	25	..	16¼	16	35	9⅞
4.	Caddo Central Oil	..	..	*2	2⅝	9⅛	1½
5.	California Petroleum, common	25	†7	26⅝	25⅞	29⅛	17⅛
6.	Cosden & Co., common	..	..	35⅝	35¾	62¼	22¾
7.	General American Tank	..	†3	45½	42½	71⅞	40
8.	General Asphalt	100	..	40¾	42¼	54	23
9.	Houston Oil	100	..	71	71¼	78	40¾
10.	Independent Oil & Gas	10	..	*6½	6½	11¼	3⅝
11.	Indiahoma Refining	25	..	1⅝	1⅝	9	1¼
12.	Indian Refining	10	..	*5	5⅛	8⅛	4
13.	Invincible Oil	50	..	16⅞	15⅝	19¼	7⅛
14.	Maracaibo	..	..	26⅞	28¼	28¼	16
15.	Marland	..	..	38⅛	37⅞	59⅝	18¼
16.	Mexican Seaboard	..	..	14	15¼	19⅝	5¾
17.	Middle States Oil	10	..	6⅝	6⅝	12¼	3⅛
18.	National Supply	50	6	68	*66	68	54
19.	Pacific Oil	..	†2	51	49⅞	52¼	31½
20.	Pan-American, common	50	16	61⅛	63½	93½	53
21.	Panhandle Prod. & Ref.	..	..	*2	*2¼	6¼	1¼
22.	Phillips Petroleum	..	†2	35⅛	33⅛	69⅝	19⅝
23.	Pierce Oil, common	25	..	2⅛	2¼	6	1½
24.	Producers & Refiners	50	..	41¼	32⅝	58¼	17⅛
25.	Pure Oil Co., common	25	6	24¾	21⅝	32	16¼
26.	Royal Dutch, N. Y., sh	13.40	2.62	48½	47⅝	55⅛	40½
27.	Shell Transport	10	x92½	*32½	*31⅝	41¼	29½
28.	Shell Union, common	..	†1	17	17⅛	19¼	12⅜
29.	Simms Pet.	10	..	11⅛	11⅜	16⅜	6½
30.	Sinclair Consolidated, common	..	†2	27	26	39⅞	16
31.	Skelly Oil	25	..	25⅞	24½	35	12½
32.	Standard of California	25	8	64⅝	63¼	64½	47⅛
33.	Standard Oil of N. J.	25	4	41⅞	37⅛	44¼	30⅞
34.	Standard of New Jersey, pfd	100	7	*116½	*116½	118¼	114⅝
35.	Superior Oil	..	..	*2	2¼	6¾	2
36.	The Texas Co.	25	12	44¼	42⅞	52⅝	34⅝
37.	Texas & Pacific Coal & Oil	10	..	11⅝	11⅞	24⅝	5½
38.	Tide Water Oil	100	4	*122⅞	*116	144	94
39.	Transcontinental	..	..	4⅛	4	14½	1¼
40.	Union Tank, preferred	100	7	*106	*106½	114	106
41.	White Eagle Oil & Ref.	..	2¼	26⅝	25⅞	30⅝	20⅛
	Standard Oil Stocks						
42.	Anglo-American Oil	5	15	16½	15¼	19¾	13⅛
43.	Borne Scrymser	100	12	*145	*140	153	110
44.	Buckeye Pipe Line	50	14	76½	70	94	69
45.	Chesebrough Mfng., com.	100	14	*233	234	340	205
46.	Continental Oil	25	8	43⅞	*42	50	32½
47.	Crescent Pipe Line	25	..	*15	*13⅛	25	15
48.	Cumberland Pipe Line	100	10	*106	*105	117	80
49.	Eureka Pipe Line	100	8	101	99	117¼	87
50.	Galena-Signal, common	100	4	68	68	78	55
51	Humble Oil & Ref.	25	4.8	41	37	41	28¼
52.	Illinois Pipe Line	100	16	141	*137	171	115
53.	Imperial Oil, Ltd.	25	16	117	114	123	92
54.	Indiana Pipe Line	50	16	90	85	103	81
55.	Intl. Pet. Co.	..	x50	21¾	19¾	24¾	13¼
56.	Magnolia Pet.	100	4.5	162	146	166	123
57.	National Transit	12.50	16	*21¼	*21⅝	29	19⅛
58.	New York Transit	100	10	78	75⅛	138	70
59.	Northern Pipe Line	100	25	*91	*93	111	96
60.	Ohio Oil Co.	25	4	75	68¼	85¾	48¾
61.	Penn-Mex Fuel	25	..	*45	37½	45	10½
62.	Prairie Oil & Gas	100	8	263	226	272	152
63.	Prairie Pipe Line	100	8	107½	103	117	93
64.	Solar Refining Co.	100	15	175	*165	212	161
65.	Southern Pipe Line	100	16	91⅛	90⅛	116	87
66.	South Penn Oil	100	..	175	145⅛	196	100
67.	South West Pa. Line	100	8	*77	*77	89	66
68.	Standard of Indiana	25	10	67⅛	64⅝	69⅞	49¼
69.	Standard of Kansas	25	8	47⅝	41¼	56¾	36½
70.	Standard of Kentucky	25	16	109½	109	109½	78
71.	Standard of Nebraska	100	20	*228	*220	280	186
72.	Standard Oil of N. Y.	25	5.6	47¼	45⅝	49¾	35½
73.	Standard of Ohio, common	100	10	320	*281	320	270
74.	Swan & Finch	100	..	*36	38	38	21½
75.	Vacuum Oil	25	10	58¼	56⅝	55½	40
76.	Washington Oil	10	..	*21	*21	28	20¼
	Miscellaneous Stocks						
77.	Cities Service, banker's shares	..	‡21	15	14⅝	18½	12¾
78.	Gulf Oil Corp. of Pa.	25	6	62¼	61¼	68¼	45¾

*Bid, no sales. †In dollars. ‡6 per cent in cash and 15 per cent stock dividend declared; now being paid in scrip. §The figures carried in this column are kept up-to-date as far as possible but are not guaranteed. xCents per share.

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange weekly was as follows:

Dec. 30	53.77	Nov. 20	45.26	Oct. 9	43.29
Dec. 24	52.28	Nov. 13	43.84	Oct. 2	43.53
Dec. 18	51.20	Nov. 6	42.60	Sept. 25	42.48
Dec. 11	49.27	Oct. 30	41.66	Sept. 18	41.43
Dec. 4	48.66	Oct. 23	42.42	Sept. 11	44.78
Nov. 27	47.74	Oct. 16	42.80	Sept. 4	44.06

CALIFORNIA RECEIPTS AND PETROLEUM IMPORTS

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the week ended December 22, totaled 1,064,000 barrels, a daily average of 152,000 barrels, against 1,848,000 barrels, a daily average of 263,714 barrels for the week ended December 15.

At Atlantic Coast Ports:	Wk. End. Dec. 22
New York	422,000
Philadelphia	95,000
Others	452,000
Total	969,000
Daily average	138,429
At Gulf Coast Ports:	
New Orleans and Baton Rouge	95,000
Daily average	13,571
Total Atlantic and Gulf Coast ports	1,064,000
Daily average	152,000

According to figures collected by the American Petroleum Institute, imports of crude and refined oils at the principal ports for the week ended December 22, totaled 1,633,000 barrels, a daily average of 233,285 barrels, compared with 1,709,000 barrels, a daily average of 244,143 barrels for the week ended December 15.

At Atlantic Coast Ports:	Wk. End. Dec. 22
Baltimore	78,000
Boston	43,000
New York	234,000
Philadelphia	161,000
Others	333,000
Total	746,000
Daily average	106,571
At Gulf Coast Ports:	
Galveston district	452,000
New Orleans and Baton Rouge	324,000
Port Arthur and Sabine district	46,000
Tampa	55,000
Total	887,000
Daily average	126,714
At All U. S. Ports:	
Total	1,633,000
Daily average	233,285

TORCH OF SALT CREEK AT LAST EXTINGUISHED

CASPER, Wyo., Dec. 29.—The Torch is out. For many months a 20-foot joint of 12-inch pipe has stood perpendicularly on the crest of a shale hill in Salt Creek Field east of the gas plant and from the top of this pipe leaped a great flame of gas that burned night and day for nearly a year in order to waste the residual gases from the gas plant. Today the gas that formerly lit up the whole central part of the field with a weird glare at night is fueling the stills of the refinery at Casper.

This torch, as it was called by the field workers at Salt Creek, became a point of interest to the visitor to the field and caused much unfavorable comment because of the wastage that was evident, for the volume of gas burned was quite large and the flame could be seen from points 30 miles away. However, there was no way of making use of this gas except through piping it for a great distance and this the Midwest proceeded to do, so an 8-inch welded line was laid from Salt Creek to Casper and this gas is now coming through this line to help refine the oil from Salt Creek that the gas first lifted out of the ground through the wells.

Pump Manufacturers Advise:—

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Fig. 1448
3x10″ Duplex Klein Type Piston Power Pump for 800 pounds working pressure. 75 barrels per hour.

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Removal of Paraffin From Oil Wells

Causes of Accumulation and Methods for Preventing and Eliminating Deposits Summarized Following Bureau of Mines Investigations

By R. Van A. Mills
Petroleum Engineer, Bureau of Mines, Department of the Interior

This paper is intended to answer briefly some of the inquiries coming to the Bureau of Mines regarding the so-called "paraffining" of oil wells and methods of preventing and remedying that trouble. The increased difficulties in operation and the losses of production caused by the deposition of gummy and waxy hydrocarbons, commonly called paraffin, in the wells, tubing, other pumping equipment, and in the pores of the productive sands, have long been recognized but the trouble has not been overcome. The nature and causes of the trouble, together with some of the possible methods by which it may be diminished or overcome, are outlined below.

The so-called paraffin that collects in oil wells and in the pores of the oil-producing sands immediately around the wells is generally made up of amorphous wax or uncracked paraffin, asphalt, or other gummy hydrocarbons mixed with more or less water, oil and inorganic silt. Some of the samples of this "paraffin" collected from oil wells in different fields and examined by the Bureau of Mines contain as much as 20 per cent by weight of water and inorganic silt, whereas other samples are composed entirely of waxy hydrocarbons and oil. The inorganic silt accompanying this "paraffin" is mostly fine sand, clayey materials, common salt and finely disseminated precipitates of calcium and magnesium carbonates. Sulphates of calcium, barium, and strontium are less common constituents of the "paraffin."

The "paraffin" material from oil wells varies in consistency from soft grease-like material resembling vaseline to hard wax-like masses resembling the natural wax ozokerite. The melting points and solubilities have a wide range of variation depending upon the composition and consistency of the paraffin. These relationships are illustrated by the results of preliminary laboratory tests (determinations and approximate melting points and solubilities) presented in Tables One and Two.

TABLE ONE

Relative Solubilities of Different "Paraffins" in Different Solvents at 85°F.

(*Solubilities expressed in percentages.)

A—Benzol, (90 per cent grade) spec. grav. 0.880 at 60°F.
B—Gasoline (motor grade) spec. grav. 0.753 at 60°F.
C—Naphtha (comm. grade) spec. grav. 0.759 at 60°F.
D—Kerosene (water white) spec. grav. 0.800 at 60°F.

	A	B	C	D
Commercial paraffin, (melting pt., 123°F.)	92	36	46	30
Soft "paraffin" from oil well tubing, Salt Creek oil field, Wyo., (melting pt., 127°F.)	3	5	4	3
Waxy paraffin from oil well casing, Garber oil field, Okla., (melting pt., 179°F.)	12	12	11	9

*A solubility of 12 per cent means that 12 pounds of the paraffin will dissolve in 100 pounds of the solvent.

TABLE TWO

Relative Solubilities of Different "Paraffins" in Different Solvents at 122°F.

(*Solubilities expressed in percentages by weight.)

	A	B	C	D
Commercial paraffin (melt. pt., 123°F.)	†1044	†1016	†780	†330
Soft paraffin from oil well tubing, Salt Creek oil field, Wyo., (melt. pt., 127°F.)	70	58	73	43.3
Waxy paraffin from oil well casing, Garber oil field, Okla., (melt. pt., 179°F.)	8	10	12	4.6

*Same as in Table One.
†At this concentration, lowering the temperature a fraction of a degree caused paraffin in the solution to solidify.

The "paraffins" from oil wells are generally less soluble and have higher melting points than commercial paraffin. At temperatures above their melting points, indefinite quantities of these materials liquify and combine with the solvents or with crude oil. Under such conditions, where hot solvents or crude oil contains high concentrations of melted paraffin, when the temperature falls below its melting point a large part of the paraffin tends to congeal immediately. Heating the solvents to temperatures slightly below the melting points of the oil well "paraffins" generally increases the dissolving action, but with the waxy paraffin from the Garber Field, Oklahoma, the solubility decreased as the temperature was raised. The low solubilities of the paraffins at ordinary temperatures and their tendency to separate out when hot solutions are slightly cooled tend to render more difficult the successful use of solvents for cleaning out oil wells.

Causes of Paraffining

The principal causes for the deposition of the so-called paraffin are:

1. The chilling incident to the sudden reduction of pressure and expansion of gas in the wells and in the producing sands close to the wells. (Lowering the temperature only a fraction of a degree often causes the deposition of paraffin from oil containing its full capacity of dissolved paraffin.)

2. The diminished solubility of the paraffin at the lowered pressures generally prevailing in the wells. (Paraffin is soluble in oil and gas at higher pressures.)

3. The churning action of the pumps and sucker rods which tends to accentuate the emulsification of water, oil and silt.

4. The evaporating and drying action of natural gas. The evaporation of the more volatile constituents of the oil leaves behind the paraffin residues to be deposited in the wells and productive sands.

5. The alternate wetting and drying of the productive sand exposed in a well where the fluid level is repeatedly lowered from the top to the bottom of the sand by pumping. Expanding gas tends to chill and dry the uncovered surfaces of sand. This wetting and drying cycle is comparable to repeatedly painting the exposed faces of the sand with paraffin.

6. The leakage of certain kinds of water into the wells, especially water carrying mechanically suspended silt or waters that carry dissolved salts which act chemically with the salts dissolved in other waters in the wells so as to form silty precipitates. The loss of carbon dioxide gas along with other dissolved gases from waters containing bicarbonates also causes the precipitation of silty carbonates, more especially calcium carbonate. The fine particles of silt seem to form the nuclei about which the oil and water emulsify to form some of the so-called paraffin materials.

Effects of Paraffining

The deposition of the paraffin and associated substances upon the faces of the productive sands in the wells and in the pores of the productive sands immediately around the wells tends to obstruct the flow of oil and gas into the wells. This damage is most common and at the same time most serious in old pumping fields where the gas pressure has been depleted and the oil has been subjected to long continued evaporation by escaping gas. The plugging effects generally become progressively worse until, in extreme cases, the flow of oil into the wells is practically shut off long before the recoverable oil is exhausted.

Casing, tubing, sucker rods, valves and working barrels also become so badly fouled with paraffin as to interfere with pumping. In some fields flowing wells, especially those flowing through tubing, become choked with paraffin deposited in the tubing and casing, or even in the flow lines that conduct the oil from the wells to the field tanks. The deposition of paraffin in a flowing well is generally the worst in the upper part of the well where the pressure is comparatively low and the oil has suffered the full chilling effect of the expanding gas. As the flow of oil and gas is choked off, the paraffin tends to run together and pack, sometimes completely filling the tubing or casing for several hundred feet. Losses in production followed by expensive pulling and cleaning jobs are the usual accompaniment of "paraffining." In extreme cases, especially where improper cleaning methods are used, the productive sands around the wells may become plugged to distances of several feet away from the wells, thus damaging those wells beyond repair.

Damage Erroneously Attributed

Hard inorganic salts, commonly termed "gyp," composed principally of carbonates and sulphates of calcium, magnesium, barium, and strontium, as well as common salt, frequently encrust the pumping equipment and walls of the wells or accumulate in the pores of the productive sands around the wells. Waters leaking into oil and gas wells frequently deposit enough inorganic salts to plug the pores of the productive sands for considerable distances from the wells. Inorganic deposits in the wells may or may not be accompanied by paraffin. The damage they cause and more especially the plugging of pores of the productive sands, is often erroneously attributed to paraffining.

Determining Causes of Trouble

Before applying methods for stopping or remedying paraffining and related troubles, it is desirable to determine the nature and causes of the trouble. So-called paraffin or mineral salt will be recognized at once when one or the other is removed from a well, but the different kinds of mineral salts plugging the pores of the sands, and also the mixtures of paraffin, oil and water, with different kinds of silt, are not so easily recognized. Possible methods of cleaning such deposits from wells and methods of preventing further deposition depend largely upon the composition and mode of formation of the deposits. A chemical examination of the paraffin should indicate whether or not it is an emulsion of paraffin and oil with water and silt. The composition of the silt and its probable mode of formation can also be determined by chemical study. If the paraffin proves to be an emulsion, the exclusion of the water from the well is one of the problems confronting the operator.

Calcite or other mineral salts plugging the pores of the oil sand generally appear as chalk-white patches between the sand grains. This trouble should be suspected if mineral crusts are found coating the equipment and walls of the well. To detect calcite or other carbonates, drop a piece of the crust or plugged up oil sand in hydrochloric acid. Calcite or other carbonates will effervesce in the acid, whereas insoluble sulphates fail to effervesce in acid. Some of the so-called paraffin deposits in southeastern Ohio

(Continued on Page 114)

SINCLAIR'S PROTEST HALTS PROBE BY SENATORIAL INVESTIGATION

WASHINGTON, D. C., Dec. 31.—Authority of a Senate committee to compel a witness to testify concerning "private business transactions" was again questioned by Harry F. Sinclair, who raised a similar issue a year ago when the LaFollette oil investigating committee unsuccessfully sought information of him about oil stock deals.

Appearing as a witness in the investigation by the Senate public lands committee into leasing of naval oil reserves, Mr. Sinclair declined to answer questions relating to what consideration was given by the Hyva Corp. for its large holdings of Mammoth Oil Co. stock, or what consideration was given for their stock by members of the Mammoth syndicate, which supervised the efforts of Jesse L. Livermore to "make a market" for Mammoth Oil.

"These are private transactions of private citizens and are not pertinent in this inquiry," said Mr. Sinclair.

Among the large investors in the Mammoth syndicate was H. P. Whitney, who was listed as holding 155,000 shares. When the witness refused to say what had been paid for this stock, or what disposition had been made of the proceeds, Senator Walsh announced he would ask for a subpoena for Mr. Whitney.

Hyva-Mammoth Deal

Mr. Sinclair offered to supply virtually all data required by the committee hearing upon the complicated procedure by which the Mammoth stock, issued by him in the first instance was transferred to the Hyva Corp. and then in large part was turned over to the syndicate for use in making a market, only to be repurchased by the witness later.

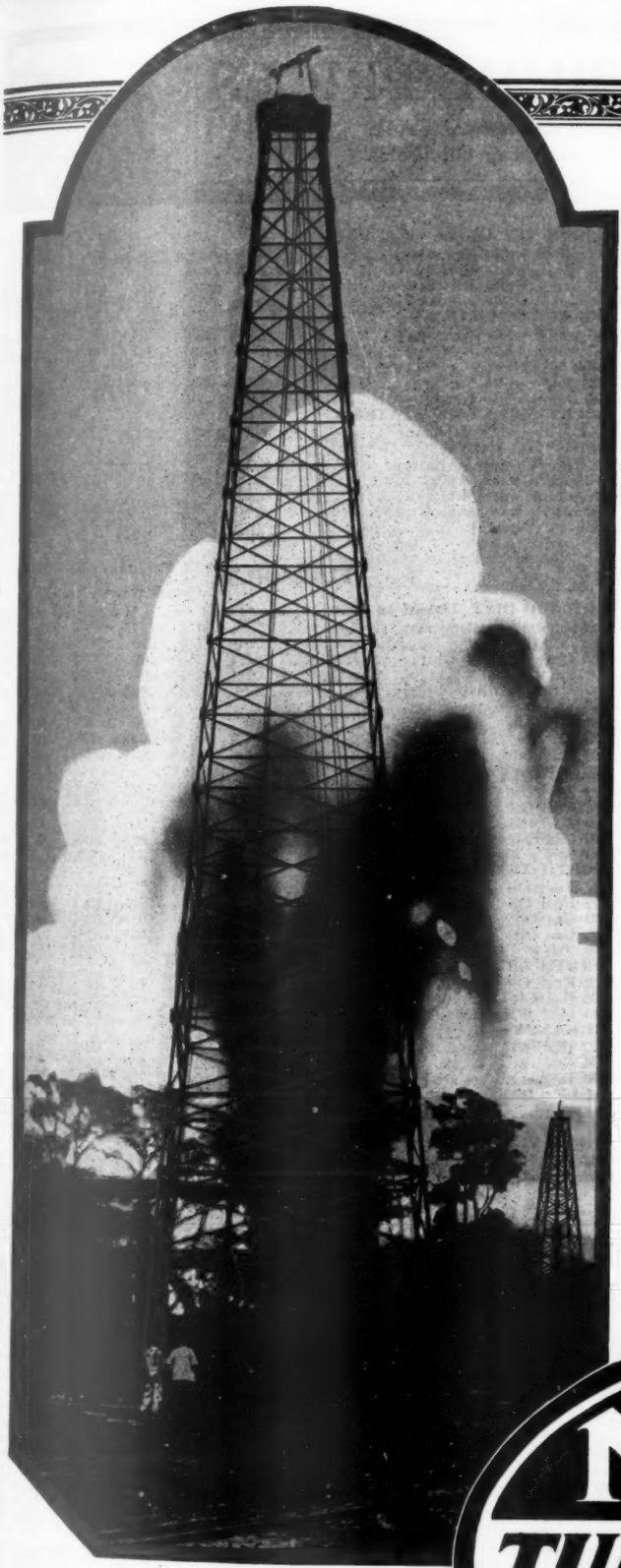
Senator Walsh's declaration that he considers the information bore a definite relation to the matter before the committee was supported by Senator Adams, Democrat, Colorado.

"On the witness' own statement," the latter said, "the Mammoth Oil Co. was organized to carry out a contract in which he considers himself 'a partner of the government' the government then certainly has a deep interest in the makeup and activities of the company. I, for one, hope the committee will insist upon complete answers."

Senators Lenroot, Republican, Wisconsin, and Smoot, Republican, Utah, took an opposite view. The inquiry appeared to be going rather far afield, this group held, and the committee's purpose would be adequately served by information which the witness offered to supply in confidence to any member.

The first clash between the witness and the committee came when he was asked to name those comprising the Mammoth Syndicate, a group said to have been formed to back and attempt

(Continued on Page 109)



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GASOLINE AND NAPHTHA

CHICAGO DIST. (Based on Group 3)—	Jan. 1		Dec. 25		Dec. 18	
50-52 450 end point (Naphtha)	.08	.08¼	.06¾	.07	.06¼	.06½
56-58 450 end point	.08¼	.08¾	.06¾	.07	.06½	.06¾
58-60 437 end point (New Navy)	.09	.09½	.07½	.07¾	.07	.07¼
60-62 400 end point	.09¾	.10	.08¼	.08¾	.08	.08¼
64-66 375 end point	.11	.11½	.09¼	.09½	.09	.09¼
68-70 360 end point	.11½	.12	.10	.10⅜	.10	.10¼
OKLAHOMA (Group 3)—						
50-52 450 end point (Naphtha)	.08¼	.08¾	.07	.07¼	.06½	.06¾
56-58 450 end point	.08½	.08¾	.07¼	.07½	.06¾	.07
58-60 437 end point (New Navy)	.09	.09½	.07½	.07¾	.07¼	.07½
60-62 400 end point	.09¾	.10¼	.08½	.08¾	.08¼	.08½
64-66 375 end point	.10¾	.11¼	.09	.09½	.09	.09¼
68-70 350-365 end point	.11¼	.11¾	.10	.10¼	.10	.10¼
KANSAS—						
58-60 437 end point (New Navy)	.09¼	.09¾	.07¾	.08	.07¼	.07½
NORTH TEXAS—						
48-52 450 end point (Naphtha)	.08	.08¼	.06¾	.07	.06¼	.06½
50-52 440 end point (Naphtha)	.08¼	.08½	.06¾	.07¼	.06¼	.06¾
56-58 450 end point	.08¼	.08¾	.07	.07¼	.06¾	.07
58-60 437 end point (New Navy)	.09	.09¼	.07½	.07¾	.07	.07¼
60-62 400 end point	.09¾	.10	.08¼	.08¾	.08¼	.08½
64-66 390 end point	.10¼	.10¾	.09	.09¼	.08¾	.09
64-66 375 end point	.10½	.11	.09¼	.09½	.09	.09¼
NORTH LOUISIANA—						
56-58 450 end point	.08¼	.08½	.06¼	.06¾	.06	.06½
58-60 437 end point (New Navy)	.08¾	.09	.07	.07½	.06¾	.07
60-62 400 end point	.09½	.09¾	.08	.08¼	.07¾	.08
64-66 375 end point	.12	.12¼				
64-66 390 end point	.11	.11½	.08¾	.09	.08¾	.09
ARKANSAS—						
58-60 450 end point	.09	.09½	.07½	.07¾	.07	.07¼
58-60 437 end point (New Navy)	.09½	.10	.07¾	.08	.07¼	.07½
64-66 375 end point	.11	.11½	.09½	.09¾	.09	.09¼
ROCKY MOUNTAIN STATES—						
*58-60 437 end point (New Navy)	.11		.10½		.09½	
PENNSYLVANIA—						
52 Naphtha	.09		.08¾		.08¾	
54 Naphtha	.09½		.09		.09	
56 Gasoline	.10		.09¼		.09¼	
58 Gasoline	.10¼		.09½		.09½	
60 Gasoline	.10½		.10		.10	
62 Gasoline	.12		.11		.11	
64 Gasoline	.13		.13		.13	
66 Gasoline	.15¼		.15¼		.15¼	
68-70 Gasoline	.16		.16		.16	

*Colorado points.

NATURAL GASOLINE

CHICAGO DIST. (Based on Group 3)—	Jan. 1		Dec. 25		Dec. 18	
Grade A, 72-78, under 375 e.p., rec. 90%	.7½	.08	.06	.06½	.05¼	.05½
Grade B, 76-82, 375 end point, rec. 85%	.07¼	.07¾	.05¼	.05¾	.05	.05¼
Grade C, 80-88, 350 end point, rec. 78%	.05½	.06	.04¾		.04¾	.05
OKLAHOMA (Group 3)—						
Grade A, 72-78, under 375 e.p., rec. 90%	.08	.08½	.06	.06¼	.05½	.05¾
Grade B, 76-82, 375 end point, rec. 85%	.07¼	.07¾	.05½	.06	.05	.05½
Grade C, 80-88, 350 end point, rec. 78%	.06	.06½	.05	.05¼	.04½	.04¾
Grade D, 88-92, 350 end point	.06	.06½	.05	.05¼	.04½	.04¾
NORTH TEXAS—						
Grade A, 72-78, under 375 e.p., rec. 90%	.08	.08½	.05¾	.06	.04¾	.05
Grade B, 76-82, 375 end point, rec. 85%	.07¾	.08	.05½	.05¾	.05	.05¼
Grade C, 80-88, 350 end point, rec. 78%	.05¾	.06¼	.05	.05¼	.04¾	.05
NORTH LOUISIANA—						
Grade B	.07¼	.07½	.05¾	.06	.05	.05¼
Grade C	.05¾	.06¼	.05	.05¼	.04¾	.05

MOTOR NATURAL GASOLINE (BLEND)

CHICAGO DIST. (Based on Group 3)—	Jan. 1		Dec. 25		Dec. 18	
58-62 437 end point	.07¾	.08¼	.06½	.06¾	.06⅛	.06⅜
60-62 450 end point	.07¾	.08¼	.06½	.06¾	.06¼	.06½
64-66 450 end point	.07¾	.08¼	.06½	.06¾	.06⅛	.06⅜
OKLAHOMA (Group 3)—						
60-62 450 end point	.08	.08½	.06½	.06¾	.06¼	.06½
64-66 437 end point	.08	.08½	.06¾	.07	.06½	.06¾
68-70 430-435 end point	.08	.08½	.06¾	.07	.06½	.06¾
NORTH TEXAS—						
58-62 440 end point	.07¾	.08¼	.06½	.06¾	.06⅜	.06⅝
58-60 450 end point	.07¾	.08¼	.06½	.06¾	.06⅜	.06⅝
PENNSYLVANIA—						
*60-62	.09¾		.09½		.09½	
*64-66	.09¾		.09½		.09½	
*66-68	.09¾		.09½		.09½	
*68-70	.09¾		.09½		.09½	

*At Sistersville, W. Va.

BURNING OIL

CHICAGO DIST. (Based on Group 3)—	Jan. 1		Dec. 25		Dec. 18	
42-43 water white Kerosene	.04⅜	.04¾	.04⅜	.04⅝	.04½	.04⅝
42-44 water white Kerosene	.04⅝	.04¾	.04½	.04¾	.04½	.04¾
OKLAHOMA (Group 3)—						
41-43 water white Kerosene	.04½	.04¾	.04½	.04¾	.04⅜	.04⅝
42-43 water white Kerosene	.04¾	.05	.04⅝	.04¾	.04½	.04¾
41-43 prime white Kerosene	.04¼	.04⅜	.04¼	.04⅝	.04¼	.04⅜
KANSAS—						
41-43 water white Kerosene	.05	.05¼	.04¾	.05	.04¾	.05
NORTH TEXAS—						
41-43 water white Kerosene	.04½	.04¾	.04¼	.04¾	.04¼	.04¾
41-43 prime white Kerosene	.04¼	.04½	.04¼	.04½	.04¼	.04½
40-42 prime white Distillate	.04	.04¼	.04	.04¼	.04	.04¼
42-44 water white Kerosene	.04¾	.05	.04¾	.04⅞	.04⅝	.05
NORTH LOUISIANA—						
41-43 prime white Kerosene	.04¾	.05	.04¾	.05	.04¾	.05
42-43 water white Kerosene	.05	.05¼	.05	.05¼	.05	.05¼
ARKANSAS—						
41-43 water white Kerosene	.05	.05¼	.04¾	.05	.04¾	.05
42-44 water white Kerosene	.05¼	.05½	.05	.05¼	.05	.05¼
ROCKY MOUNTAIN STATES—						
*40-42 prime white Kerosene	.07¾		.07½		.07½	
PENNSYLVANIA—						
43 Kerosene prime white	.07		.06¾		.06¾	
45 Kerosene water white	.07½		.07		.07	
46 Kerosene water white	.08		.07¾		.07¾	
47 Kerosene water white	.08½		.08¼		.08	
36 Miners' Neutral	.07¾		.07¼		.07	

*Colorado points.

FUEL OILS

CHICAGO DIST. (Based on Group 3)—	Jan. 1		Dec. 25		Dec. 18	
24-26 Fuel Oil (sellers' cars, Group 3)	.85	.90	.77½	.82½	.75	.80
22-24 (El Dorado)	.72½	.77½	.70	.75	.65	.70
18-20 (Smackover)	.67½	.72½	.60	.65	.57½	.60
32-36 Gas Oil	.02½	.02¾	.02½	.02¾	.02½	.02¾
38-40 Straw distillate	.03¼	.03½	.03⅛	.03⅝	.03	.03¼
KANSAS—						
24-26 Fuel Oil	.95	1.05	.95	1.00	.90	.95
32-36 Gas Oil	.02¾	.03	.02¾	.03	.02¾	.03
38-40 Distillate	.03¾	.04¼	.03½	.03¾	.03½	.03¾
OKLAHOMA (Group 3)—						
24-26 Fuel Oil (buyers' cars)	.85	.90	.80	.85	.75	.80
24-26 Fuel Oil (sellers' cars)	.90	.95	.85	.90	.80	.85
28-30 Fuel Oil (sellers' cars)	.95	1.00	.90	.95	.85	.90
32-36 Gas Oil	.02½	.02¾	.02½	.02⅝	.02⅜	.02½
38-40 Straw Distillate	.03¼	.03½	.03	.03¼	.03	.03¼
NORTH TEXAS—						
24-26 Fuel Oil	.80	.85	.75	.80	.75	.80
26-30 Fuel Oil	.85	.90	.80	.85	.80	.85
32-36 Gas Oil	.02½	.02⅝	.02⅜	.02½	.02¼	.02⅜
36-38 Gas Oil	.02⅝	.02¾	.02⅝	.02¾	.02⅝	.02¾
38-40 Straw Distillate	.03¼	.03½	.03	.03¼	.03	.03¼
NORTH LOUISIANA—						
20-22 Fuel Oil	.75	.80	.70	.75	.70	.75
32-36 Gas Oil	.02½	.02¾	.02½	.02¾	.02½	.02⅝
38-40 light Straw Distillate	.03	.03¼	.03	.03¼	.03	
ARKANSAS—						
38-40 Distillate	.03	.03¼	.03	.03¼	.03	
32-36 Gas Oil	.02⅝	.02¾	.02½	.02¾	.02¾	
22-26 Refinery Fuel Oil	.80	.85	.75	.80	.70	.75
GULF COAST (South Texas)—						
Gas Oil	.03½	.04	.03½	.04	.03½	.04
Fuel Oil	1.15	1.20	1.15	1.20	1.15	1.20
PENNSYLVANIA—						
30-34 Fuel Oil	.05		.04¾		.04¾	
36-40 Fuel Oil	.05¼		.05		.05	
34 Neutral	.08¼		.07½		.07½	

NEUTRAL OILS

OKLAHOMA (Group 3)—	Jan. 1		Dec. 25		Dec. 18	
Pale Neutrals:						
70-80 vis., 2½ color, 20-25 cold test	.04	.04¼	.04	.04¼	.04	.04¼
100 vis., 2 color, 20-25 cold test	.05	.05½	.05	.05½	.05	.05½
100 vis., 3 color, 20-25 cold test	.04¾	.05	.04¾	.05	.04¾	.05
150 vis., 3 color, 20-25 cold test	.09½	.10	.09½	.10	.09½	.10
150 vis., 4 color, 20-25 cold test	.09	.09½	.09	.09½	.09	.09½
180 vis., 4 color, 23-28 cold test	.11¼	.11¾	.11¼	.11⅝	.11¼	.11⅝
180 vis., 3 color, 23-28 cold test	.12	.12½	.12	.12½	.12	.12½
200 vis., 3 color, 23-28 cold test	.13	.13½	.13	.13½	.13	.13½
200 vis., 4 color, 23-28 cold test	.12¼	.12¾	.12¼	.12¾	.12¼	.12¾
200 vis., 3 color, 25-30 cold test	.14	.14½	.14	.14½	.14	.14½
220 vis., 4 color, 25-30 cold test	.13¼	.13¾	.13¼	.13⅝	.13⅛	.13⅝
240 vis., 3 color, 25-30 cold test	.15	.15½	.15	.15½	.15	.15½
240 vis., 4 color, 25-30 cold test	.14¼	.14¾	.14¼	.14⅝	.14¼	.14⅝
280 vis., 3 color, 25-30 cold test	.17½	.18	.17½	.18	.17½	.18
280 vis., 4 color, 25-30 cold test	.16½	.17	.16½	.17	.16½	.17
300 vis., 3 color, 25-30 cold test	.18	.18½	.18	.18½	.18	.18½
Red Neutrals:						
180 vis., 5 color, 23-28 cold test	.10½	.11	.10½	.11	.10½	.11
180 vis., 6 color, 23-28 cold test	.09¾	.10¼	.09¾	.10¼	.09¾	.10¼
200 vis., 5 color, 23-28 cold test	.11½	.12	.11½	.12	.11½	.12
200 vis., 6 color, 23-28 cold test	.10¾	.11¼	.10¾	.11¼	.10¾	.11¼
220 vis., 5 color, 25-30 cold test	.12½	.13	.12½	.13	.12½	.13
220 vis., 6 color, 25-30 cold test	.11¾	.12¼	.11¾	.12¼	.11¾	.12¼
240 vis., 5 color, 25-30 cold test	.13½	.14	.13½	.14	.13½	.14
240 vis., 6 color, 25-30 cold test	.12¾	.13¼	.12¾	.13¼	.12¾	.13⅜
280 vis., 5 color, 25-30 cold test	.15½	.16	.15½	.16	.15½	.16
280 vis., 6 color, 25-30 cold test	.14½	.15	.14½	.15	.14½	.15
150-160 vis., 1 color, 40-50 cold test	.04½	.05	.04½	.05	.04½	.05
190-200 dark green, 40-50 cold test	.03½	.04	.03½	.04	.03½	.04
600 steam refined	.16		.16		.16	
590-600 Bright Stock	.23	.26	.23	.26	.23	.26
600-610 Bright Stock	.28	.31	.28	.31	.28	.31
Waxes:						
124-126 White Crude Scale Wax	.03	.03¼	.03	.03¼	.02¾	.03

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

PENNSYLVANIA—	Jan. 1	Dec. 25	Dec. 18
150, 3 color	.23½	.22½	.22½
180, 3 color	.26½	.25½	.25½
200, 3 color	.29	.27¼	.27
220, 3 color	.31½	.30	.30
600, steam refined	.14¼	.13¼	.13
625, steam refined	.16	.15½	.14½
650, steam refined	.18½	.16½	.16
600, Pennsylvania flash	.20½	.18½	.18
650, Pennsylvania flash	.25	.23½	.23
*550, E filtered	.17	.16	.15½
*600, E filtered	.19	.18	.17½
600, E filtered	.18	.16½	.15¾
600, D filtered	.25	.23½	.23
550, E filtered	.16	.15¼	.14½
550, D filtered	.20	.18½	.18
Pennsylvania Bright Stock	.33	.31¾	.31¾
†122-124 White Crude Scale Wax	.03⅝	.03⅜	.03⅜
*122-124 White Crude Scale Wax	.03¾	.03½	.03½
300 Mineral Seal	.07½	.07½	.07½

*At Warren, Penn. †At New York City.

GULF COAST (South Texas)—	Jan. 1		Dec. 25		Dec. 18	
Lubricating Stocks:						
Zero Black	.07½	.08	.06½	.07	.06½	.07
No. 2 color, 100 vis., pale oil	.09½	.11	.09	.10	.09	.10
No. 2½ color, 150 vis., pale oil	.10½	.11	.10½	.11	.10½	.11½
No. 3 color, 200 vis., pale oil	.12½	.13	.11½	.12½	.11½	.12½
No. 3½ color, 300 vis., pale oil	.15	.16	.14	.15	.14	.15
No. 3½ color, 500 vis., pale oil	.16½	.17½	.15½	.16½	.15½	.16½
No. 3½ color, 750 vis., pale oil	.22	.23½	.21	.23	.21	.23
No. 1½ color, 150 vis., filtered	.21	.22	.21	.22	.21	.22
No. 2 color, 200 vis., pale filtered	.23	.25	.23	.25	.23	.25
No. 2½ color, 300 vis., pale, filtered	.28	.29	.28	.29	.28	.29
No. 3½ color, 500 vis., pale, filtered	.32	.33	.32	.33	.32	.33
No. 3½ olor, 750 vis., filtered	.38	.40	.38	.40	.38	.40
No. 5 to 6 color, 200 vis., red oil	.11	.12	.10	.11	.10	.11
No. 5 to 6 color, 300 vis., red oil	.12½	.13	.11½	.12½	.11½	.12½
No. 5 to 6 color, 500 vis., red oil	.14½	.15	.13½	.14½	.13½	.14½
No. 5 to 6 color, 750 vis., red oil	.21½	.22	.20	.21	.20	.21

NEW YORK DOMESTIC MARKET

	Jan. 1	Dec. 25	Dec. 18
Motor Gasoline:			
Greater New York, in steel barrels	.15½	.15½	.15½
New York State (outside Greater New York and New England, tank wagon	.15½	.15½	.15½
New Jersey, tank wagon	.15½	.15½	.15½
Gasoline in bulk, delivered at N. Y.	.10	.09½	.09½
V. M. P. Naphtha, in steel barrels	.14½	.14½	.14½
Kerosene:			
Greater New York, tank wagon	.15	.15	.15
New York State (outside Greater New York and New England, tank wagon	.15	.15	.15
New Jersey tank wagon	.14	.14	.14
Lubricating Oil (Industrial) at refinery:			
Bayonne, N. J.:			
Cylinder, extra light filtered, in barrels	.37½	.37½	.36½
Cylinder, light filtered, in barrels	.32½	.32½	.31½
Cylinder, Bright Stock	.44	.44	.44
Cylinder, steam refined (600)	.22½	.22½	.21½
Black, in bulk	.09½	.09½	.09½
Bloomless, white, 30-31 gravity, 170 vis.	.43	.43	.43
Bloomless, 885 specific gravity	.10½	.10½	.10½
Red Paraffin:			
170 viscosity	.18	.18½	.18½
212 viscosity	.20	.20	.20
262 viscosity	.22	.22	.22
295 viscosity	.25	.25	.25
Paraffin, 903 specific gravity	.22½	.22½	.22½
*Fuel Oil:			
Bunker Oil, 14 plus, delivered in barges, bbl.	1.35	1.35	1.35
Diesel Oil, at refinery, gallon	.03½	.03½	.03½
Furnace Oil, tank wagon, gallon	.10	.10	.10
Gas Oil, delivered in New York	.04	.04	.04
Wax, fully refined:			
120-122 a.m.p.	.04	.04	.03⅝
125-127 a.m.p.	.04¼	.04¼	.03¾
130-132 a.m.p.	.04¾	.04¾	.04¼
135-137 a.m.p.	.05⅝	.05⅝	.05¼

*Lighterage, 6.5c a barrel extra.

NEW YORK EXPORT PRICES

	Jan. 1	Dec. 25	Dec. 18
Motor Gasoline, in cases, gallon	.24.4	.24.4	.24.4
Motor Gasoline, U. S. Navy, spec. gallon	.10.5	.10.5	.10.5
Naphtha, 60° F., 59-61 spec. grav	.12.0	.12.0	.12.0
Naphtha, 60° F., 63-66, spec. grav	.14.0	.14.0	.14.0
Naphtha, 60° F., 66-68 spec. grav	.15.5	.15.5	.15.5
Kerosene:			
Standard white, in bulk, gallon	.07	.07	.07
Standard white, in barrels, gallon	.14	.14	.14
Standard white, in cases, gallon	.17.15	.17.15	17.15
Water white, in cases, gallon	.08	.08	.08
Water white, in barrels, gallon	.15	.15	.15
Water white, in cases, gallon	.18.5	.18.5	.18.5

CRUDE OIL PRICES

December 27.—The Texas Co. in North and Central Texas and Oklahoma, where it buys crude on gravity scale advanced its prices from 15 to 40 cents on a basis of four schedules; same company advanced Gulf Coast, Powell and Mexia crudes 25 cents; same company advanced North Louisiana and Smackover crudes 15 cents. The Humble Oil & Refining Co., in North and Central Texas met The Texas Co. prices for all grades above 33° gravity. Below 33° gravity, the Humble company advanced its two grades 10 cents. The same company advanced Powell and Mexia crudes 25 cents and Currie crudes 35 cents. Humble Oil & Refining Co., Sun Oil Co., and Gulf Refining Co. advanced Gulf Coast prices as shown in the table.

December 28.—The Magnolia Petroleum Co. in Kansas, Oklahoma and North and Central Texas, where it buys on a gravity basis met The Texas Co.'s North and Central Texas and Oklahoma prices on all grades above 33° gravity; same company advanced its grades below 33° gravity, 10 and 15 cents, met Texas and Humble prices in Mexia and Corsicana light and advanced Corsicana heavy 10 cents. Cabell, Somerset Light and Somerset medium, and Ragland crudes were advanced 10 cents.

December 29.—Standard Oil Co. of Louisiana made a general advance of 15 cents in North Louisiana and Arkansas crudes, meeting The Texas Co. prices announced December 27, in the same fields. The Atlantic Oil Producing Co. advanced Stephens, Ark., crude 15 cents.

December 31.—Seep Purchasing Agency advanced all grades of Pennsylvania crudes 15 cents.

January 2.—Ohio Oil Co. advanced Lima, Indiana, Illinois, Princeton, Plymouth, Waterloo and Wooster crudes 10 cents. Imperial Oil, Ltd., advanced Canadian crudes 10 cents.

Arkansas and North Louisiana

Caddo, 38° and above	$1.25
35° to 37.9°	1.15
32° to 34.9°	1.05
Below 32°	.90
Homer, 35° and above	1.25
33° to 34.9°	1.15
31° to 32.9°	1.05
Below 31°	.90
Haynesville, 33° and above	1.15
Below 33°	1.05
El Dorado, 33° and above	1.25
Below 33°	1.15
Bull Bayou, 38° and above	1.20
35° to 37.9°	1.05
32° to 34.9°	.90
De Soto	1.25
Crichton	1.05
Bellevue	.90
Smackover, 26° and above	.90
25° to 25.9°	.75
24° to 24.9°	.65
Below 24°	.55
*Stephens, Ark., 28° and above	.95
*26° to 27.9°	.90

*Posted by Atlantic Oil Prod. Co.

Wyoming and Montana

Rock Creek (Wyo.)	$ .60
Salt Creek	.60
Big Muddy	.45
Mule Creek	.45
Grass Creek	.95
Elk Basin	.95
Lance Creek	.90
Osage	.90
Cat Creek (Mont.)	.90
Sunburst (Mont.)	.70
Greybull and Torchlight	.95
Hamilton Dome	52½

Lander and Lost Soldier based on contracts covering entire production of fields.

Oklahoma, Kansas, North and Central Texas

Corsicana Light	$1.25
Corsicana Heavy	.50
Mexia	1.25
Currie	1.25
Currie (Humble Oil & Ref. Co.)	1.35
Powell	1.25
Thrall	1.00
Prairie Oil & Gas Co., Sinclair Crude Oil Purchasing Co.:	
Below 33°	$ .75
33° to 39.9°	1.00
40° and above	1.25
Humble Oil & Refining Co., The Texas Co., Magnolia Petroleum Co.:	
33° to 35.9°	1.15
36° to 38.9°	1.30
39° and above	1.40
Magnolia Petroleum Co.:	
Below 28°	.50
28° to 30.9°	.75
31° to 32.9°	.90
Humble Oil & Refining Co.:	
Below 30°	.90
30° to 32.9°	1.00
The Texas Co. and Gulf Pipe Line Co.:	
Below 33°	.90

Gulf Coast

Gulf Pipe Line Co., Goose Creek, Hull, Sour Lake, Batson, Saratoga, Spindletop, Orange, Vinton, Edgerly, Jennings	$1.25
Grade "B," Pierce Junction, Blue Ridge	.90
The Sun Pipe Line Co., Grade "A," Humble, Hull, Goose Creek, Orange, Spindletop, Saratoga, Batson, Dayton, Sour Lake	1.25
Grades "B," Blue Ridge, Pierce Junction	1.00
Humble Pipe Line Co., Goose Creek, Hull, West Columbia, Orange	1.25
Grade "B," Pierce Junction	1.00
Texas Pipe Line Co., Humble, West Columbia, Orange, Sour Lake, Saratoga, Batson, Vinton, Jennings, Markham	1.25
Sinclair Pipe Line Co., West Columbia, Damon Mound	1.00

California

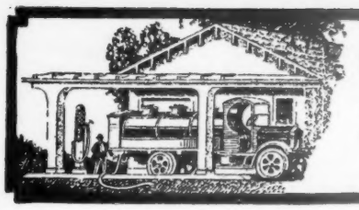
14° to 19.9°	$ .60
20° to 20.9°	.61
21° to 21.9°	.62
22° to 22.9°	.63
23° to 23.9°	.64
24° to 24.9°	.65
25° to 25.9°	.66
26° to 26.9°	.67
27° to 27.9°	.68
28° to 28.9°	.69
29° to 29.9°	.70
30° to 30.9°	.71
31° to 31.9°	.72
32° to 32.9°	.73
33° to 33.9°	.74
34° to 34.9°	.75
35° gravity and above	.76

Eastern States

Penna Grade Oil in New York Transit Lines	3.25
Bradford District Oil in National Transit Lines	3.25
Penna Grade Oil in National Transit Lines	3.00
Penna Grade Oil in Southwest Pa. Pipe Lines	3.00
Penna Grade Oil in Eureka Pipe Lines	3.00
Penna Grade Oil in Buckeye Pipe Lines	3.00
Corning Grade Oil in Buckeye Pipe Line Lines	1.40
Cabell Grade Oil in Eureka Pipe Line Lines	1.45
*Somerset Medium Oil in Cumberland Pipe Line Lines	1.40
*Somerset Light Oil in Cumberland Pipe Line Lines	1.55
Ragland Grade Oil in Cumberland Pipe Line Lines	.85
Lima	1.63
Wooster	1.00
Illinois	1.42
Indiana	1.43
Princeton	1.42
Plymouth	.80
Waterloo	.90
†Petrolia, Canada	2.03
†Oil Springs, Canada	2.10

*Somerset oil commands 6 cents over the above posted price.

†Plus Government bounty of 52½c.



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States, as furnished by the larger marketing concerns, Dec. 31

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

Main Service Station Price

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Chicago district	14.0	..	16.0	10.0

Tank wagon prices on April 10, 1922, g. up 1½c; May 8, g. up 1c; June 27, both up 1c; July 19, g. down 2c; k. down 1c; Oct. 10, g. down 2c; Oct. 31, g. down 1c; Feb. 5, 1923, g. up 1c; Feb. 20, g. up 1c; Aug. 14, g. down 6.6c; Oct. 4, k. down 1½c; Nov. 10, g. down 1.4c; Dec. 29, g. up 2c.

Decatur, Ill.	14.2	..	16.2	10.5
East St. Louis	13.1	..	16.25	9.6
Joliet	14.4	..	16.4	10.7
Peoria	14.2	..	16.2	10.5
Quincy	14.2	..	16.2	10.3
Davenport, Ia.	14.5	..	16.5	10.9
Des Moines	14.5	..	16.5	10.9
Keokuk	14.5	..	16.5	10.9
Sioux City	14.0	..	16.0	10.5
Duluth, Minn.	15.2	..	17.2	11.6
Minneapolis	14.9	..	16.9	11.6
La Crosse, Wis.	15.2	..	17.2	11.4
Milwaukee	14.0	..	16.0	10.2
Madison	14.3	..	16.3	10.5
Detroit, Mich.	14.8	..	16.8	11.2
Grand Rapids	14.7	..	16.9	11.1
Saginaw	14.9	..	16.7	11.3
Evansville, Ind.	16.0	2.0	18.0	10.5
Fort Wayne	16.4	2.0	18.4	10.9
Indianapolis	16.2	2.0	18.2	10.7
South Bend	16.4	2.0	18.4	10.9
Fargo, N. D.	16.6	1.0	18.6	13.6
Huron, S. D.	18.0	2.0	20.0	12.1
Sioux Falls	17.5	2.0	19.5	11.6
*Kansas City	14.9	1.0	16.9	9.3
Springfield	13.8	..	15.8	10.2
*St. Louis	13.6	.5	16.9	10.0
*St. Joseph	14.3	.5	16.3	10.2
Wichita, Kans.	13.8	..	15.8	9.8

*City tax.

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND

Atlantic Refining Co.

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
*Pittsburgh, Pa.	14.0	..	19.0	14.0
*Philadelphia	14.0	..	19.0	14.0
*Scranton	14.0	..	19.0	14.0
*Allentown	14.0	..	19.0	14.0
*Altoona	14.0	..	19.0	14.0
Dover, Del.	16.0	2.0	19.0	14.0
Wilmington	16.0	2.0	19.0	14.0
Providence, R. I.	16.5	..	18.0	14.0
Springfield, Mass	14.5	..	17.0	14.0
Worcester	14.5	..	17.0	14.0
Boston	14.5	..	17.0	14.0
Hartford, Conn.	16.5	1.0	19.0	14.0
New Haven	16.5	1.0	19.0	14.0

*Pennsylvania tax of 2 cents is collected by the dealer and paid by him direct to the State.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Atlanta, Ga.	16.0	3.0	18.0	14.0
Augusta	18.0	3.0	20.0	15.0
Macon	18.0	3.0	20.0	15.5
Savannah	16.0	3.0	18.0	14.0
Birmingham, Ala.	16.0	2.0	18.0	15.5
Mobile	16.0	2.0	17.0	13.5
Montgomery	16.0	2.0	18.0	16.0
Clarksdale, Miss	14.0	1.0	16.0	14.0
Jackson	14.0	1.0	16.0	12.0
Natchez	13.5	1.0	15.5	13.5
Vicksburg	13.5	1.0	15.5	13.5
Jacksonville, Fla	16.0	3.0	18.0	14.0
Miami	18.0	3.0	20.0	15.5
Pensacola	16.0	3.0	18.0	14.5
Tampa	16.0	3.0	18.0	14.0
Covington, Ky.	16.0	1.0	18.0	13.0
Lexington	15.0	1.0	17.0	14.0
Louisville	14.0	1.0	16.0	13.0

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Denver, Colo.	14.0	2.0	16.0	12.5
Glenwood Spgs.	19.0	3.0	....	16.5
Pueblo	15.0	2.0	17.0	12.5
Basin, Wyo.	16.0	1.0	....	13.0
Casper	14.0	1.0	16.0	11.0
Cheyenne	15.5	1.0	17.5	13.0
Cody	17.0	1.0	....	14.0
Lander	16.0	1.0	....	13.0
Billings, Mont.	18.5	2.0	20.5	14.5
Butte	20.0	2.0	22.0	15.0
Great Falls	20.0	2.0	22.0	16.0
Helena	20.0	2.0	22.0	16.0
Miles City	19.5	2.0	21.5	15.5
Boise, Idaho	20.0	2.0	22.0	18.0
Salt Lake, Utah	18.0	2.5	20.0	15.5
Ogden	18.0	2.5	20.0	15.5
Albuquerque, N. M.	19.0	1.0	21.0	15.5

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Newark, N. J.	15.5	..	....	14.0
Atlantic City	15.5	..	....	14.0
Annapolis, Md.	16.0	1.0	19.0	14.0
Baltimore	16.0	1.0	19.0	13.0
Cumberland	16.0	1.0	19.0	15.0
Washington, D. C.	15.0	..	18.0	13.5
Norfolk, Va.	18.0	3.0	20.0	13.0
Petersburg	18.0	3.0	20.0	14.5
Danville	18.0	3.0	20.0	15.5
Richmond	18.0	3.0	20.0	13.5
Roanoke	18.0	3.0	20.0	15.0
Keyser, W. Va.	17.0	2.0	....	15.0
Charleston	17.0	2.0	....	13.5
Parkersburg	17.0	2.0	....	12.0
Wheeling	17.0	2.0	....	13.5
Charlotte, N. C.	18.0	3.0	....	14.5
Hickory	18.0	3.0	....	15.0
Mt. Airy	18.0	3.0	....	14.5
Salisbury	18.0	3.0	....	15.0
Charleston, S. C.	18.0	3.0	....	12.5
Columbia, S. C.	18.0	3.0	20.0	14.5

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Dallas, Tex.	12.0	1.0	15.0	9.0
Fort Worth	12.0	1.0	15.0	10.0
Houston	14.0	1.0	18.0	11.0
San Antonio	12.0	1.0	15.0	9.0
El Paso	12.0	1.0	13.0	12.0
Muskogee, Okla.	13.0	1.0	16.0	11.0
Oklahoma City	13.0	1.0	16.0	11.0
Tulsa	13.0	1.0	16.0	10.0
Ft. Smith, Ark.	15.0	4.0	18.0	12.0
Little Rock	17.0	4.0	20.0	13.0
Texarkana	17.0	4.0	20.0	12.0

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Albany, N. Y.	15.5	..	18.5	14.0
*New York	15.5	..	18.0	15.0
Buffalo	14.0	..	17.0	15.0
Rochester	15.0	..	17.0	13.0
Syracuse	15.0	..	17.0	15.0
Boston, Mass.	14.5	..	17.0	15.0
Providence, R.I.	15.5	..	19.0	15.0
Augusta, Me.	15.5	1.0	19.0	15.0
Manchester	15.5	1.0	19.0	15.0
Burlington, Vt.	15.5	1.0	19.0	15.0

*Price in steel barrels.

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Omaha	14.25	..	16.25	10.5
Crawford	15.0	..	....	11.25
MCook	15.75	..	17.75	12.0
Norfolk	14.75	..	16.75	11.0
North Platte	15.75	..	17.75	11.75
Scotts Bluff	15.25	..	17.25	11.25

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
New Orleans, La	11.5	1.0	14.5	9.0
Alexandria	12.5	1.0	15.5	13.0
Baton Rouge	11.0	1.0	14.0	11.5
Lake Charles	12.5	1.0	15.5	13.0
Shreveport	12.5	1.0	15.5	13.0
Memphis, Tenn.	14.0	2.0	17.0	14.0
Chattanooga	14.5	2.0	17.5	14.5
Knoxville	15.5	2.0	18.5	15.0
Nashville	13.5	2.0	15.5	13.5
Bristol	16.0	2.0	19.0	15.5
Little Rock, Ark	16.0	4.0	19.0	13.0
West Helena	16.0	4.0	19.0	13.0

PACIFIC COAST DISTRICT

Standard Oil Co. (California)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
San Francisco	13.0	2.0	16.0	15.5
Los Angeles	12.0	2.0	15.0	15.5
Fresno	13.5	2.0	16.5	17.5
Reno, Nev.	16.5	2.0	19.5	19.0
Portland, Ore.	15.0	3.0	18.0	16.5
Seattle, Wash.	14.0	2.0	11.0	16.5
Tacoma	14.0	2.0	17.0	16.5
Spokane	16.0	2.0	21.0	20.5
Phoenix, Ariz.	19.0	3.0	22.0	21.5
Honolulu, H.	12.5	..	15.5	17.5
Juneau, Alaska	13.5	..	16.5	18.0

OHIO

Standard Oil Co. (Ohio)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
All Ohio points	16 0	..	18.0	13.0

TANK WAGON CHANGES

Effective December 26, The Continental Oil Co. advanced gasoline tank wagon and service station prices 1 cent at Albuquerque, N. M.

Effective December 29, the Standard Oil Co. of Indiana advanced gasoline tank wagon and service station prices 2 cents in entire territory. Magnolia Petroleum Co. advanced gasoline tank wagon and service station prices 1 cent at Arkansas points; same company in Oklahoma, where its tank wagon price was below advanced to 13 cents with a 16-cent service station price.

Effective December 30, Standard Oil Co. of Nebraska advanced its gasoline tank wagon and service station prices 2 cents in Nebraska.

Effective January 1, Magnolia Petroleum Co. and the Standard Oil Co. of Louisiana advanced gasoline tank wagon and service station prices 1 cent in Arkansas. Increase covers advance in gasoline tax from 3 to 4 cents. On the same date the Delaware tax advanced from 1 to 2 cents; New Hampshire from 1 to 2 cents; Washington from 1 to 2 cents. Marketing organizations generally advanced their prices to cover these tax increases.

NORTH TEXAS REFINERS ASKING HIGHER PRICES

FORT WORTH, Tex., Dec. 31.—Taking advantage of the higher crude prices and the comparatively small amount of stocks on hand, the refiners in North Texas are today quoting 9 to 9¼ cents on New Navy gasoline for prompt shipment, although no sales have yet been reported at these prices. Most of the plants have sufficient orders ahead to keep them busy for the next week or 10 days on sales made some time ago and practically no future sales are being consummated, with little available for immediate shipment. None of the plants is reported as storing New Navy gasoline, their daily runs being almost entirely consumed in taking care of previous orders and the comparatively small amount of current sales now being made.

The 64-66 gasoline is strong at 9¾ to 10 cents, although few, if any, of the plants are in a position to take advantage of the increased prices at present, due to orders already on hand.

In sympathy with the higher prices being quoted in Group 3, kerosene remains srong at 4¾, with some quoting 5 cents. In the face of a fairly active demand and small stocks, there is little likelihood of any material weakening in the North Texas kerosene market for the present, at least.

The natural gasoline market continues to show an improvement, Grade A being generally quoted at around 7½ cents. There seems to be a good general demand due to refiners storing this material and most of the plants report being fairly well sold up to the middle of January.

Gas oil is being quoted at 2¼ to 2½ cents, with little movement. Light straw is scarce at 3⅜ to 3½ cents.

Fuel oil is active at 85 to 90 cents, with a good demand and movement. Due to the higher prices being quoted in the Luling Field, this competition is now practically removed and the North Texas fuel situation seems to have once more resumed its natural state. Practically no fuel oil is being stored and with the somewhat depleted stocks, higher prices for this material are predicted.

COASTAL REFINERIES ADVANCING PRICES

HOUSTON, Tex., Dec. 31.—Coinciding with the 25 cents per barrel increase in Coastal crude oil, refiners of this product have advanced prices of zero cold test oils about 1 cent a gallon. This advance is not universal yet. But the concerns still holding to old figures say they will mark advances after January 1.

So the crude advance can be charged with boosting the price of finished products 1 cent a gallon in the Coastal territory. This is certain, while there is talk of at least another advance, regardless of the trend of the crude market. This last, however, is being considered, with no time set for putting it into effect.

Continual demand for zero cold test oils is giving refiners courage to follow the crude market with finished oil prices. Each concern questioned as to business for the year reported a much better year than last. This has been brought about largely through the strong business of the past three months. Records of twice as much oil shipped in December of 1922 as in the corresponding month of 1921 are frequent with Coastal refiners.

The Coastal country has had better weather for the past week than for more than a month. This has helped to speed the work of plants. Loading has been quicker and some plants have regained most of the loss of the long spell of rain.

If the dickering of sales managers to get oils from each other, is any criterion, plants of the Coastal area will go into the coming year with scant stocks. For two months refiners have been dealing with each other to get oils for immediate shipment. In no instance can sufficient stocks be found to be classed as a surplus. The few concerns having any reserves are those selling part of their output under their own trademark, which requires that stocks be kept sufficient to meet this demand.

The few refiners running filtered oils have more stocks than those putting out only the unfiltered products. The greater movement is on unfiltered oils and the price advances following the crude rise have been on unfiltered oils. Unfiltered oils are at the old figures. But the plants with these stocks are scheduled to advance prices shortly after January 1.

TO PERMIT SECRETARY TO DELAY OSAGE SALES

Introduction of a bill, to permit the Secretary of the Interior to postpone sales of Osage oil leases in times of low crude oil prices, has been sponsored by Senator Spencer and it is possible the Osage Oil & Gas Lease Association will support it.

The bill provides that "the Secretary of the Interior may reduce the area to be offered annually or suspend the offer of leases for not exceeding two years at any one time when, in his opinion, an overproduction of oil or inadequate prices therefor make such extension or suspension desirable in the interests of the Osage Nation."

The next annual meeting of the Osage Oil & Gas Lessees' Association will be held in Tulsa January 8, when the policy of the association on the matter will be determined. At the same time election of officers and a new executive committee will be held.

AMARILLO PIPE LINE

AMARILLO, Texas, Dec. 20.—An official of the Atchison, Topeka & Santa Fe Railroad Co. is quoted as saying that company could afford to contract for the entire output of a refinery capacity at Amarillo of 24,000 bbls. of crude oil daily. This and other reports are responsible for efforts to secure a pipe line from the oil field in Carson County.

SINCLAIR'S SIGN of SERVICE SATISFACTION and SECURITY

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1. Large crude oil reserve.
   (Through affiliated Companies)
2. Modern refineries.
3. Petroleum products for general industrial demands.
4. Facilities for prompt domestic and foreign shipments.
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6. Merchandise and service guaranteed.
7. Personnel proficiency in oil operations.

SINCLAIR REFINING COMPANY

New York, Sinclair Oil Bldg., 45 Nassau St.
Chicago, 111 W. Washington St.
Cable Address: "Lucent"

MEN KNOWN IN OILDOM

W. H. Gray

W. H. Gray, president of the National Association of Independent Oil Producers, and one of the most widely known men in the oil industry, was born in Texas in 1877.

He first became interested in oil while practicing law in Beaumont, Texas, having started his legal career there upon graduation from the law school of the University of Texas shortly before the Beaumont Field was discovered.

Since that time, his legal practice has been confined almost exclusively to the oil industry and he has had a leading role in several cases that have attracted national attention. He was assistant prosecutor in the famous trial of the Standard Oil Company in Texas for alleged violation of the anti-trust law, and was counsel for H. Clay Pierce in his historic fight against the Rockefeller interests.

Mr. Gray is regarded as one of the foremost analysts of the petroleum industry, and is recognized as one of the leading spokesmen of the independents.

PERSONAL PARAGRAPHS

Louis Franklin is in Casper, Wyo., engaged in depletion and subsurface work for the New York Oil Company.

* * *

W. A. Ellerbrock of the Crucible Steel Company of St. Louis was in Tulsa a few days last week on business.

* * *

M. W. Teats, manager of the R. & J. Dick Company of Kansas City, Mo., spent several days in Tulsa last week.

* * *

A. J. Hardendorf, well known oil man of Wyoming, left for California last week where he will stay during the winter.

* * *

Jack Taylor, purchasing agent for the Margay Oil Corporation, Tulsa, spent the holidays in Little Rock and El Dorado, Ark.

* * *

F. C. Laurie, general manager in Mexico of the Island Oil & Transport Corporation and its subsidiaries, has left Tampico for a visit to the United States.

* * *

D. E. Buchanan, sales manager of Chestnut & Smith Corporation, Tulsa, has been calling on Chicago purchasers of natural gasoline during the past week.

H. H. Harris and Robert Hays, of Okmulgee, Okla., recently organized the Harris-Hays Oil Company, with headquarters in that city.

* * *

W. H. Price, district manager of the Rocky Mountain region for Black, Sivalls & Bryson, Inc., spent the holidays at his old home in Toledo, Ohio.

* * *

C. O. Beroth, president of the Acme Petroleum Company, Chicago, is again in his office, after spending several days in Dallas and other cities of the Southwest.

* * *

R. H. McElroy, Jr., secretary of the James B. Berry's Sons Company, Chicago, is making an extended business trip to southwestern points during the holidays.

* * *

Dr. W. M. Burton, president of the Standard Oil Company of Indiana, has returned to his Chicago office after spending six weeks in California on business matters.

* * *

E. A. Canavan, who has charge of the southwestern district of the Milwaukee Tank Works, came through Tulsa last week on a trip through the Mid-Continent territory.

* * *

Harry A. Daugherty, general attorney for the Standard Oil Company of Indiana, has returned to Chicago, after representing his company in California recently on legal matters.

* * *

The many friends of David Shelby of Tulsa, chief scout of the Prairie Oil & Gas Company, will be glad to learn that he is on the road to recovery after several weeks of serious illness.

* * *

Frederick Anderson of the legal department of the Midwest Refining Company, with headquarters in Denver, was in Casper, Wyo., early last week conferring with officials of the company.

* * *

Norval White, Pacific Coast representative of the American Petroleum Institute, has returned to his San Francisco office after attending the fourth annual meeting of the institute at St. Louis.

* * *

W. W. Splane and S. Y. Ramage of Oil City, Pa., attended a directors' meeting of the Union Natural Gas Company, held in Pittsburgh last week, at which time the usual dividend was declared.

* * *

R. R. Irwin, sales manager of the White Eagle Oil & Refining Company, was elected chairman of the board of the Oil Men's Club of Kansas City at the annual meeting of the club held recently.

* * *

P. B. Shouvlin, president of the Superior Gas Engine Company of Springfield, Ohio, was a Casper, Wyo., visitor last week, with Emil Opferkuck, sales manager of the company. The two men are visiting many points in the Rocky Mountain region.

* * *

H. J. Huffman, a high official of the South Penn Oil Company, who is in charge of operations of the Penn Mex Oil Company in Mexico, with headquarters in Pittsburgh, Pa., arrived in Tampico in time to see his company's No. 22 Alamo come in.

* * *

Louis Roark, of Okmulgee, Okla., geologist for the Kingwood Oil Company, has returned from Colorado, where he has been for the past three weeks on business. While there he visited the famous gasser of the Union Oil Company, near Fort Collins.

* * *

W. H. Geis of the Consolidated Royalty Company, with headquarters in Casper, Wyo., left for California where the Consolidated Royalty and others will put down a deep test to see whether the Cretaceous horizons under the Tertiary contain oil.

* * *

T. J. Thompson, manager of sales and director of the Standard Oil Company of Indiana, Chicago, has left for England where he will visit the scenes of his boyhood. Mr. Thompson left Glossup, Derbyshire, when nine years old, coming to the United States with his parents. He started with the Standard as a tank wagon driver at Grand Rapids, Mich., more than 40 years ago and has worked his way up through the organization steadily. Mr. Thompson will visit friends and relatives in other parts of England, Scotland and Ireland before returning to Chicago.

* * *

Walter B. Pyron, vice president of the Gulf Production Company and general manager of that company's operations in the North Central Texas fields for the past six years, was transferred from the division office at Fort Worth to the headquarters office of the company at Houston the first of the year.

* * *

F. P. Rushmore, of the land department of the Gypsy Oil Company, who has been in charge of the company's Montana land and leasing operations this year with headquarters at Great Falls, has returned to the Tulsa headquarters, the company having withdrawn from further activity in the Montana fields.

* * *

Col. U. G. Lyons of Warren, Pa., president of the National Petroleum Association, attended the quarterly meeting of the association held at Pittsburgh recently. Judge C. D. Chamberlain of Cleveland, secretary of the association, and Fayette B. Dow of Washington, D. C., an active member, were also in attendance.

* * *

F. X. Anglin, active vice president of the Atlantic Gulf Oil Corporation, has been in Tampico, Mexico, for two or three weeks inspecting the company's (Agwi Companies) property. Mr. Anglin was formerly general manager in Mexico, having been succeeded when he returned about three years ago to the New York headquarters of the company, by T. R. Batte.

* * *

R. S. Myers has been appointed refinery superintendent for the Keen & Woolf Oil Company's plant at Houston, Texas. He succeeds A. E. Peterson, whose resignation became effective December 15. G. C. Mayfield, formerly with The Texas Company, will become chemist for the Keen & Woolf Company, the place formerly held by Mr. Myers. Mr. Mayfield assumed his new duties January 1.

* * *

David F. Connolly, adviser to C. F. Lufkin, chairman of the board of The Texas Company, New York headquarters, is spending several months in California. Mr. Connolly has been an oil operator since early boyhood—tool dresser, driller, contractor, operator and corporation executive—and does his own interpreting. He was one of the first easterners to go to the Indian Territory when oil was discovered there in 1900.

* * *

Temple B. Hoffer, of Houston, Texas, has announced that he has tendered his resignation as director of the Producers & Refiners Corporation and as vice president in charge of operations. The Fensland Oil Company, of which Mr. Hoffer was president at the time it was taken over by the Producers & Refiners Corporation, has been turned back to him with its charter and permits, and he will again operate it as a producing company in Oklahoma, Texas and Wyoming.

* * *

R. B. Walthall, chief supervisor of the oil and gas division of the Texas Railroad Commission, left Houston last week for an inspection tour of the coastal oil fields as well as the oil and gas areas of east Texas. He was accompanied by W. F. Arnold, deputy supervisor, with headquarters in Houston. After the coastal fields are covered, the two will visit the shallow production in Nacogdoches and Rusk Counties, later going to the Panola gas field in that county and Harrison County.

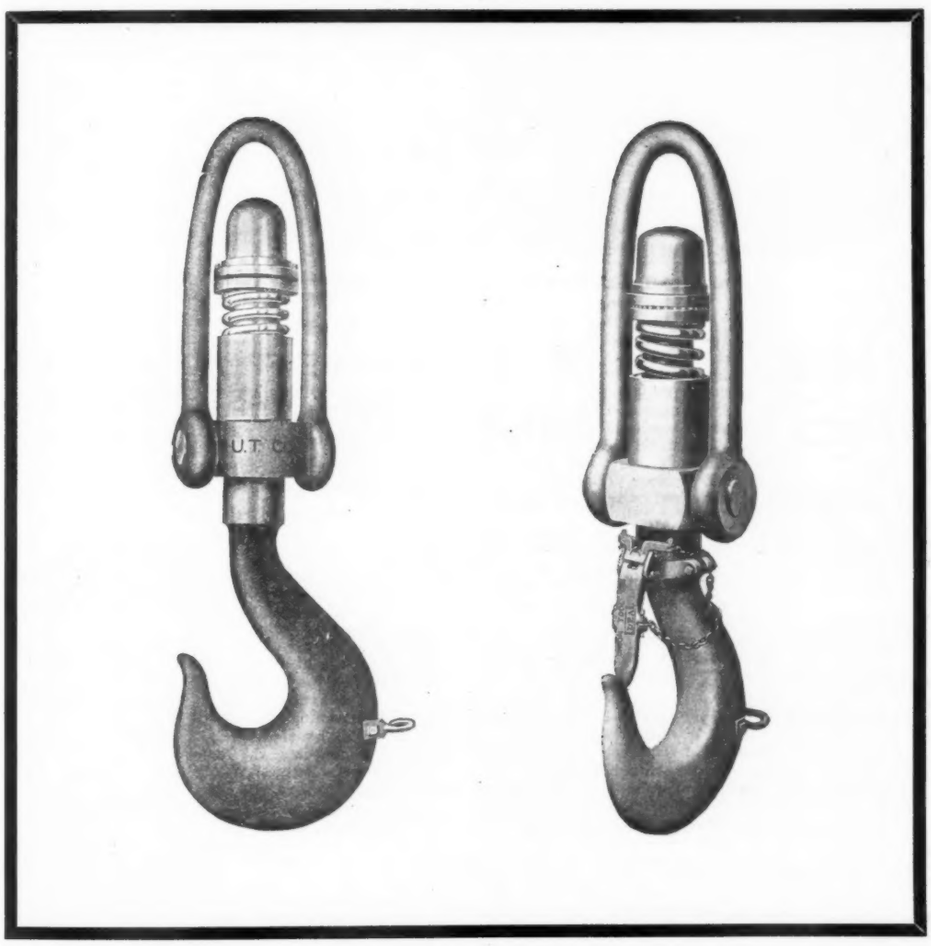
* * *

J. Alvin Gardner, first assistant to W. B. Pyron, vice president of the Gulf Production Company, has resigned his position. Mr. Gardner is widely known among oil men. His entrance into the oil industry dates back to 1908 when he joined the forces of the J. M. Guffey Petroleum Company at Shreveport, La. In 1909 the Gulf Production Company absorbed the Guffey interests and Gardner went with the new company. Mr. Gardner will move to Wichita Falls, Texas, and join the ranks of the independent operators, confining his efforts to the semi-shallow producing territory of Wichita and Archer Counties.

IDEAL

WIGLE SPRING CASING HOOK

For Casing, Pipe and Tubing



Shock absorbing feature effects savings in drilling cost.

NSCO THE NATIONAL SUPPLY COMPANIES NSCO

NATURAL GAS DEVELOPMENTS

FIGURING TO RETURN GAS COMPANY INVESTMENT WHEN SUPPLY IS GONE

By Victor Lauriston

CHATHAM, Ont., Dec. 30.—Results of the Ontario Government appraisal of the properties of the Union Natural Gas Co. and estimates of the fields of southwestern Ontario have just been made public in a report of 241 pages, representing close to a year's labor on the part of the engineering and accounting staff. The report was compiled under the supervision of Col. R. B. Harkness, Natural Gas Commissioner; R. O. Wynne-Roberts, consulting engineer and D. R. Roberts, accountant; and its object was the careful collection of data to be used as a basis for the fixing of a permanent natural gas rate for the communities supplied by the Union Natural Gas Co.

Gas rates in western Ontario have, since 1917, been the subject of much controversy, and have formed the basic issue of municipal politics in many localities. Till the present, the rates have been fixed in most cases by a process of bargaining between municipalities and companies; while in communities where no agreement could be reachel the Natural Gas Board of Reference has fixed a tentative rate, pending the result of the audit and appraisal. The purpose of the Government in the present appraisal is to provide the actual facts relative to the gas fields and the operations of the company, so that a rate may be fixed which will be fair to both the consumers and the company. The report makes no recommendation as to rates, merely supplying the data necessary for rate fixing. Within the next few weeks, however, the Natural Gas Board of Reference will hold sittings at which the rate question will be taken up for permanent adjustment.

Gas Until 1940

The report states that the natural gas fields of Tilbury, Dover and Dawn will continue to supply gas for general purposes in the communities at present supplied till the year 1935. For a further five years after that date the fields will still be available for meeting a sharply restricted consumption. By the year 1940 the fields will be played out for commercial purposes, and the plant of the Union Natural Gas Co., representing an investment of $6,343,780 will be valuable only as scrap.

The summary of the report details the Union Natural Gas Co.'s investment as follows: Leaseholds, $1,774,128; lands owned in fee, $23,430; private rights of way and easements, $14,468; buildings and lots, $138,813; machinery, $29,235; wells and equipment, Tilbury Field, $1,090,664; Dover Field, $250,609; Dwan Field, $97,889; compressor station, $200,200; transmission lines, $2,913,089; distribution lines, $334,297; regulators and checking motors, $86,399; telephone lines, $28,355; services, $68,380; domestic meters and regulatos, $185,031; autos, horses and vehicles, $29,089; tools and miscellaneous equipment, $87,935; overhead and intangible expense, $906,698; working capital, $388,540—a total of $8,929,568. These figures, however, represent the reproduction values of the plant with new machinery. Considerable of the equipment was acutally purchased second hand, so that the company's real investment was placed at $6,343,780.

Sinking Fund Plans

The view of the appraisal committee is that this latter sum is the one which should be returned to the company by the time the fields become valueless for further operations. In order that this may be accomplished, a sinking fund, dated from 1914, the time at which the investment of the company was completed, is suggested. Three forms of a fund are proposed. First, an annual sinking fund of 5 per cent per annum. Second, a straight line sinking fund, which shall diminish each year by the application of the interest which the sinking funds for the preceding years are returning. The third plan, a proposal of Colonel Harkness, is the refunding of the concern's investment. The appraisal committee estimates that the sinking fund should at present total $2,520,662 on a straight line basis, or $1,496,361 on a 5 per cent sinking fund basis. As a matter of fact, the company's sinking fund does not reach these totals. Consideration, however, the committee points out, must be given to the fact that the company has reinvested in its plant considerable money that might properly have been credited to its sinking fund.

AMARILLO GAS FIELD

AMARILLO, Tex., Dec. 29.—A gauge made of the gas in the Tipton & Stone well near White Deer, which is to be drilled deeper soon, shows that its daily capacity is 50,000,000 feet and that it has a rock pressure of 1,100 pounds. The rock pressure is unusual, since virtually all wells drilled into gas sands in the Texas Panhandle have had about 430 pounds rock pressure. The depth of this well is 3,050 feet. Deeper drilling is in search of oil.

The Texas Co., near Lefors, Gray County, has a formation at about 2,200 feet that is making 5,000,000 feet of gas and spraying oil. The Texas Co. has a solid block of 15,000 acres of leases in that vicinity.

TEST READY TO SERVE RULE

AUSTIN, Texas, Dec. 29.—Appeal of the Municipal Gas Co., from action of the City of Wichita Falls, denying it the right to collect a 50-cent "ready to serve" charge, was submitted before the State Railroad Commission. J. W. Hassell, former chief of the Railroad Commission Oil and Gas Division, represented the gas company. The case was taken under advisement. Authority of the State Railroad Commission over municipal utility rates has just been upheld in a State court of civil appeals.

GASSER IN BILLINGS FIELD

BILLINGS, Okla., Dec. 29.—In the Billings-Garber district, Hopper and others have completed No. 1 Stein, northeast of the northeast of the northwest of 12-24-4w, for 2,000,000 feet of gas in a sand at 2,339-45 feet. Hopper and others also have made a location and are spudding at No. 1 Seamans, southwest of the southwest of the southwest of 1-24-4w.

TO DRILL NEAR WAGONER

WAGONER, Okla., Dec. 31.—The Peer Oil Corp. of Houston, Tex., has agreed to drill several gas wells near this town for the M. T. C. Co., which has the gas franchise for this place. R. M. Briggs, manager of the Tulsa office of the Peer, has surveyed the Wagoner Field and says that locations will be made shortly for the wells.

NATURAL GAS FOR OKEMAH

Gas for the Municipal Light & Water Department of Okemah, Okla., is being sold to that city by the Oil Production Department of the Empire companies. The natural gas will be furnished from the Alice Grayson No. 1 and the Payne No. 1, located 2½ miles south of Okemah. The town of Okemah will lay a 2-inch line to the meter setting of the Grayson well. The consumption will amount to approximately 250,000 feet of natural gas per day.

TO EXTEND LINE FROM OKLAHOMA TO TEXAS

OKLAHOMA CITY, Okla., Dec. 31.—The Lone Star Gas Co. announces that its trunk line from Oklahoma to Texas will be in service again over Red River, at Byars, by January 1, according to Theodore Fritzner, president of the Glenhoma Oil Syndicate, who was here recently making arrangements to move the Oklahoma office of the syndicate to Oklahoma City.

Floods washed out the Lone Star line about the middle of October and the company took no gas from the Stephens, Cotton and Comanche County fields until December 10. At that time a temporary line across the river had been installed. The Lone Star has been taking approximately 25 per cent of the gas from that territory.

BLACKWELL GASSERS HAVE SURPLUS FLOW

BLACKWELL, Okla., Dec. 29.—Blackwell's gas wells in the old field northeast, the Otstot Pool northwest and the territory southeast of the city, have and open flow or production every 24 hours of 55,544,000 feet of high grade gas. Of this amount, the Blackwell Oil & Gas Co. uses 9,564,000 feet, leaving a surplus of 44,980,000 feet unused or shut in the wells.

Of the surplus gas shut in the wells, a fourth of the production can be used for domestic or industrial consumption, as the conservation laws of the State of Oklahoma provide that only 25 per cent of the output of a gas well can be used, the other being held as a reserve.

The Blackwell district has 11,245,000 feet of gas as a surplus to be sold for industrial consumption, as the gas now used is ample for domestic consumption. This amount of surplus gas would supply cheap fuel for three large plants or a dozen small ones.

RESIDUE FROM CASINGHEAD GAS ONCE WASTED NOW REVENUE SOURCE

By H. M. Houston and J. B. O'Connor of the Miller Improved Gas Engine Co.

As is well known, a certain amount of gas accompanies the oil produced by a large proportion of oil wells. This gas is known as "casinghead gas." Formerly casinghead gas was almost entirely wasted excepting such part as was used for fuel for drilling and pumping and other field operations. Today, a very large amount of valuable high gravity gasoline is extracted from casinghead gas. The sale of this casinghead gasoline increases the revenue of the oil industry. The article by J. H. Welch of the Tidal Refining Co., reprinted in the December 13 issue of The Oil and Gas Journal, emphasizes the importance of this source of revenue.

A further source of revenue from casinghead gas which is just beginning to be taken advantage of on a large scale is the sale of the residue after the gasoline has been extracted. In certain localities there is a large surplus of residue casinghead gas after all requirements have been met for field operations, etc. It will be obvious, however, that the sale of residue gas depends not only on there being an important surplus over the requirements for operating the properties, but upon the existence of pipe lines and compressor plants to transport the gas to a market.

The residue gas leaves the absorber in the case of an absorption plant, or leaves the regulating valve on the accumulator tanks in the case of a compression plant, at a sufficiently high pressure to carry it to a booster station for raising its pressure to pipe line pressure. This booster station may sometimes serve several gasoline plants and the pressure at which the residue gas is discharged from the latter is thus a very important advantage. However, it will be apparent that to market casinghead residue gas on a large scale usually requires a large investment in pipe lines and compressor stations to carry the gas to the municipal or industrial piping systems which distribute it to the ultimate consumers. To justify the large investment there must be a sufficiently permanent supply as well as a large enough market.

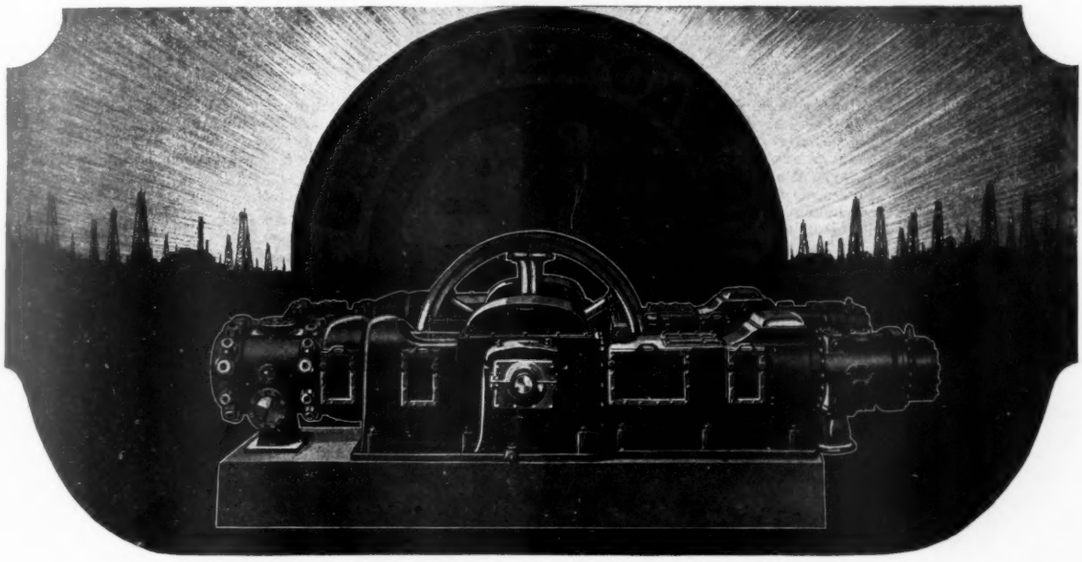
Two Important Markets

There are two important localities where residue gas is being marketed, or shortly will be marketed, on a large scale. These are in Burbank, Tonkawa and other fields in northern Oklahoma, and in the Ranger and Breckenridge districts in West Texas. In the Burbank Field are several compressor stations which in the aggregate boost 20,000,000 to 30,000,000 feet of residue gas daily to the Empire distributing system in Kansas. The largest of the Burbank stations is that of the Tidal Oil Co., which contains about 2,000 horse power of Miller direct driven compressors, there having been recently installed three additional Miller units. This plant at present boosts gas to the Empire lines at Caney, Kans. On completion of an additional pipe line, the Cambridge, Kans., station of the Empire system will take Burbank residue gas and send it to Wichita, Hutchinson and other Kansas towns.

In the Tonkawa Field a compressor station is now boosting residue gas to Ponca City and to other towns. A second compressor station is under construction in the Tonkawa Field for boosting residue gas to the Blackwell smelters and to the town of Tonkawa. These stations take residue gas from the various casinghead gasoline plants in the Tonkawa oil field. There are other smaller stations boosting residue gas in other localities in northern Oklahoma and elsewhere.

In West Texas, in what may be called the Breckenridge-Ranger district, there has been such a development of the casinghead gasoline industry that hundreds of millions of feet of residue gas may have been thrown away daily. Recently the Lone Star Gas Co. built

(Continued on Page 92)



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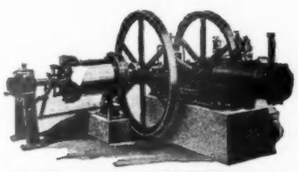

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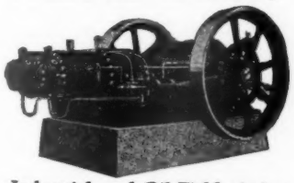

Industrial and Oil Field service prove the Bessemer Type IV Oil Engine most efficient and economical where gas is not available.

Mere Technical Excellence Is Not Enough

Oil field service is not theoretical—it is a problem of making good under conditions which are not ideal.

An engine that would operate beautifully in a laboratory under expert supervision might easily fail utterly in the field. Not every oil field engineer has the time to make himself into a Professor of Internal Combustion. An oil field engine must be P-R-A-C-T-I-C-A-L.

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BESSEMER OIL FIELD ENGINES – COMPRESSORS VACUUM PUMPS – ROLLER PUMPING POWERS

Oil Resources of U. S. Still Enormous

While the Production Since the Drake Well Amounts to More Than Seven Billion Barrels, Vast Amount Remains Unrecovered

By Walter M. Dunham

A sufficient number of books have been written about petroleum to constitute a whole library few of which serve as a book of reference today on account of the many and rapid changes constantly taking place in practically every phase of the industry, and no one branch can justly claim first honors in time, cost and labor saving mechanical inventions, new and important discoveries in chemical research, in the science of practical geology, and in the application and utilization of these advanced accomplishments. The history of petroleum is an

Walter M. Dunham

endless story of the marvelous achievements of the chemist and the refiner making petroleum the primary or raw material for a vast series of compounds; the creditable successes in pipe line, railway tank car, ocean and Great Lake transportation; the broad expansion in the quick, safe and economical marketing the manifold products of petroleum; the continued progress in technical geology which is making the production of petroleum a science in place of the disastrous hit-and-miss method of the past; the herculean efforts of the producer endeavoring to keep pace with the apparently insatiable consumption demand, and last but not least the heroic ubiquitous wildcatter to whom more credit is due than has been accorded him by oil history writers.

As it exists today the petroleum industry is composed of eight distinct but closely related branches, financial, accounting, land department, transportation, refining, marketing, geological and developing. Each of these has its own particular problems and each must be considered separately as well as in its relation to the others if any comprehensive picture of the oil industry is to be obtained. Continuity of the supply depends entirely upon the discovery and development of new and important pools. To this end, prospecting for oil is continuous and in this work the "wildcatter" is a most important factor. He may not die rich but he points the way to others who do.

Tendency to Big Business

Those who follow oil development have observed the tendency of late years to big business, due to the exigency of the expansion of the industry as compared with the demands of a few years ago. There are more lines of endeavor in the oil business that demand large capital than in any one industry in the world today. While many men have become immensely wealthy as individuals in the production and refining of oil, the rule is becoming more and more arbitrary that combinations of men and capital are essential in developing the greatest efficiency and profits, because so many oil fields are being discovered that one man alone cannot reach out profitably and keep pace with the rapidly expanding industry.

No one however prejudiced cannot but express admiration of the big American oil companies of today, both Standard and Independent, who serve as ideal models for all the world. Their growth and expansion could not have been accomplished without a combination of capital and brainy men, despite the wail of the "shoestring" oil operator whose desire is to do business as his father did when the oil business of the country was done on a nickel and dime basis, instead of endeavoring to keep pace with the rapid whirl of progressive methods in oil finance that has enabled scores of corporations that had a small beginning to grow and expand, paying to fortunate stockholders annually ten and twenty times the original capital of Standard Oil.

There is no such thing as being slow but sure in oil development, but there is such a thing as being swift and sure. The laggard and the think-it-over-until-tomorrow man has no place in present day operations, because every branch of the business has become so large, the competition so sharp as to cause events to move as swiftly as a racing automobile, and every man ambitions for financial success in oil must think and act as fast and as clearly as he possibly can. In oil development, fortune smiles on the men having abounding faith, nerves of steel, unfailing vision and a strong desire to win, and is willing to take a chance to do it. The failures are men of mediocre ability who can see further into the past than into the future, possessing a keen hindsight and more often found at the mourners' bench relating a story of hard luck than of possessing a life membership in the good fellows club of "Who Is Who in Oildom."

Production the Mainspring

In taking a survey of the American oil industry, it is found that from the completion of the famous Drake well, Saturday, August 27, 1859, the first well drilled for oil, the total production of crude oil to the end of 1923, a period of nearly 65 years, will have aggregated 7,184,582,000 bbls. of 42 gallons capacity each. The importation of Mexican crude oil began in 1909, including this year to the end of 1923, a period of nearly 15 years, a total of 644,088,000 bbls. was shipped into this country, bringing the total quantity of petroleum available to the end of 1923 to 7,828,670,000 bbls. At the rate of consumption in 1923, this entire quantity could be consumed and destroyed during a period of 11 years.

An analysis of the domestic production figures during the 65 years under review show that only 14 annual decreases have occurred throughout all the years, and all credited to the years preceding 1906. In this respect the American oil industry stands unique in having only one decrease in annual production during the 25 years ending 1923. This lone decrease occurred in 1906, amounting to only 8,223,644 bbls., increasing 39,601,399 bbls. the following year. The combined total quantity of decrease in annual production during the 14 years amounted to only 35,489,148 bbls., a quantity less than the production in Oklahoma during any three months of 1923. This marvelous record undoubtedly stands unparalleled in the history of any commodity above or under the ground.

The geometrical progression in crude oil production in the United States has astonished the oldest men in the business. This can be illustated as follows: After varying approximately between 50,000,000 and 60,000,000 bbls. in the decade between 1890 and 1900, the industry closed the century with an output of over 63 000 000 bbls. in 1900, rose to 88,000,000 bbls. in 1902, to 100,000,000 bbls. in the succeeding year, to 117,000,000 bbls. in 1904, and to nearly 135,000,000 bbls. in 1905; and after a slight decline in 1906, the output rose again in 1907, reaching 166,000,000 bbls.

Growth Is Phenomenal

Since then the growth has continued this phenomenal course to 178,000,000 bbls. in 1908 to 183,000,000 bbls. in 1909, attaining 209,000,000 bbls. in 1910, advancing to 220,000,000 bbls. in 1911. In 1912 the production increased only 2,486,000 bbls. over the preceding year, leading to the belief that the maximum in annual output had been reached, but not so, as the crude oil production in 1913 was increased 25,511,000 bbls. over the output in 1912, bringing the yield in 1913 to 448,446,000 bbls. Production continued making new high records, 1914 with 265,000,000 bbls.; 281,000,000 bbls. in 1915. The next seven years saw an output of crude petroleum unparalleled in oil history, and a consumption demand far in excess of the quantity produced. Over 300,000,000 bbls. is credited to the year 1916, and 355,000,000 bbls. in 1917. The year 1918 maintained the pace set 18 years previous with an output of 355,000,000 bbls., 378,000 000 bbls. in 1919, with an increase in 1920 of 64,562,000 bbls., bringing the production to 442,929,000 bbls., advancing to 472,000,000 bbls. in 1921. The 1922 and 1923 record-breaking production figures are so big as to be but little understood and appreciated. The figures for 1922 stand at 557,531,000 bbls., an increase over the 1921 output of 85,348,000 bbls. The 1923 output in magnitude completely outclasses the gigantic figures of 1922, aggregating approximately 725,000,000 bbls., an increase over 1922 of 168,195,000 bbls., which is more oil than was produced in this country during any one of the first 49 years or from 1859 to the end of 1907.

Production and Consumption in 1923

When the United States Geological Survey issued its first statistical report for the year 1922, the marketed petroleum production was given as amounting to 551,197,000 bbls., and the consumption of domestic and imported petroleum 586,359,000 bbls. The revised figures made public in August increased the production figures 6,334,000 bbls., bringing the total to 557,531,000 bbls. The consumption figures were increased 6,063,000 bbls., increasing the annual figures to 592,442,000 bbls. This addition accounting for the oil consumed on leases, etc.

Based on the daily average domestic petroleum production during the first 10 months of 1923, which amounted to 1,969,113 bbls., the total production for the year will approximate 719,000,000 bbls., to which can be added the quantity of oil consumed on leases amounting to approximately 7,000,000 bbls., increasing the total production during the year to 725,726,000 bbls.

The daily average consumption of domestic and imported petroleum during the first 10 months of 1923 amounted to 1,930,043 bbls., which gives a total consumption for the full year of 704,465,695 bbls., to which revised figures will add not less than 6,000,000 bbls., bringing the total consumption figures for the full year to 710,465,695 bbls.

The increase in the domestic production in 1923 as compared with 1922 aggregates 168,195,000 bbls. in total, and 441,631 bbls. increase in daily average. The 1923 total production exceeds the world's total production during any one year to and including the year 1920, a period of 62 years, by over 29,500,000 bbls. It would be superfluous to make a corresponding comparison of the con-

THE EFFECT OF IMPROVED TECHNIQUE UPON PRODUCTION OF PETROLEUM

By Joseph E. Pogue

A Paper Presented Before the American Statistical Association in Washington, December 28, 1923

The conclusions reached in this study may be briefly summarized as follows:

1. The rate of increase in crude oil production in the United States, which averaged 7.1 per cent per annum over the period 1907-1919, underwent an acceleration to an average rate of 16.6 per cent per annum over the period 1919-1923.

2. This sharp increase in momentum was the result of improved technique in oil finding and oil production, under the stimulus of an extraordinary flow of new capital into the petroleum industry attracted by the idea that an oil shortage lay ahead.

3. The simultaneous development of improved technique in refining, leading to the larger extraction of gasoline from crude oil, also stimulated by capital inflow induced by the shortage idea, retarded the demand for crude oil to the extent that roughly two-thirds of the impetus of crude oil production derived from improved technology was in excess of economic requirements and led to overproduction.

4. The low prices caused by the resulting period of overproduction have created a sufficient check on the momentum of oil production to substantially decrease the rate of increase probable for 1924.

5. In the near future, the factor of resource limitation may be expected to create a further check on the momentum of crude oil production, and the tentative conclusion is offered that 1924 will witness the beginning of a change in the trend of crude oil production to a gentler gradient.

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There are so many steps in the production of poles, and their ultimate service life depends on the proper execution of each.

Successful pole preservation demands a sound pole to start with—a decayed or unsound pole cannot be made strong by treatment.

For that reason International Poles are cut from fine selected pine timber, trimmed, peeled and removed quickly from the decay producing conditions of the woods.

Each pole is inspected singly for its entire length and only mechanically sound poles are stencilled for framing and treatment. That's why International Poles excel in service.

International Creosoting and Construction Co.

General Office: Galveston, Texas

Plants: Texarkana, Texas Beaumont, Texas Galveston, Texas

1 International Poles are produced in the pineries of the South.

2 The poles are peeled immediately after cutting and removed quickly from the woods.

3 The poles are inspected rigidly—only sound poles are framed completely before treatment.

4 Section of treating plant, where high grade creosote oil is injected full length far into the wood.

5 International Creosoted Southern Yellow Pine Poles between Hicks and Fort Worth, Texas. Southwestern Bell Telephone Company.

sumption figures on account of their close relationship to the production figures. The figures of each having entered into the higher mathematics, a few million barrels more or less does not materially change the situation as regards supply and demand. In this respect, however, we can add to the production figures the quantity of petroleum imported during the year 1923 which will closely approximate 81,034,000 bbls., a daily average of 222,011 bbls., bringing the total quantity of crude oil available to 806,760,000 bbls., an almost inconceivable amount.

A 25-Year Record

During the 40 years prior to the year 1899, the total production of crude oil in the United States amounted to 882,911,826 bbls., or 23 per cent more than the marketed production in 1923. The phenomenal results attained in annual and total production during the past 25 years, with only one decrease in annual output, reflects the advances made in geological knowledge of the petroleum rocks and its intelligent application. Deeper drilling in recent years has resulted in the finding and development of richer deposits of a higher grade of crude oil yielding a more generous amount of gasoline, and petroleum geologists who have made good in the past freely predict that deeper productive oil sands will be found by the drill which will rival those of the past and probably excel in total output for the reason the deeper sands appear to be longer-lived than the comparatively shallower deposits. At any event the future of the American oil industry from the standpoint of production alone is most encouraging.

Calendar Year	Barrels Production	Increase *Decrease	Monthly Average	Daily Average
1899	57,070,850	1,706,617	4,755,904	156,358
1900	63,620,529	5,768,665	5,301,711	174,303
1901	69,389,194	6,549,679	5,782,433	190,107
1902	88,766,916	19,337,722	7,397,243	243,197
1903	100,461,337	11,694,421	8,371,778	275,237
1904	117,080,960	16,619,623	9,756,747	320,770
1905	134,717,580	17,636,620	11,226,465	369,089
1906	126,493,936	*8,223,644	10,541,161	346,558
1907	166,095,335	39,601,399	13,841,278	455,056
1908	178,527,355	12,432,020	14,877,280	489,126
1909	183,170,874	4,643,519	15,264,240	501,838
1910	209,557,248	26,386,374	17,463,104	574,121
1911	220,449,391	10,892,143	18,370,783	603,971
1912	222,935,044	2,485,653	18,577,920	610,781
1913	248,446,320	25,511,186	20,703,852	680,614
1914	265,762,585	17,316,305	22,146,878	728,111
1915	281,104,104	15,341,569	23,425,343	770,148
1916	300,767,158	19,663,054	25,063,930	821,770
1917	335,315,601	34,548,443	27,942,967	918,673
1918	355,927,716	20,612,115	29,666,643	975,144
1919	378,367,000	22,439,284	31,530,583	1,036,622
1920	442,929,000	64,562,000	36,910,750	1,210,189
1921	472,183,000	29,254,000	39,348,583	1,238,858
1922	557,531,000	85,348,000	46,460,083	1,527,482
1923	725,726,000	168,195,000	60,477,167	1,988,290
Total	6,320,395,893		21,067,986	620,737
RECAPITULATION				
1899-1903, 5 years	397,308,826	45,057,104	6,621,813	217,703
1904-1908, 5 years	732,915,166	78,066,018	12,048,586	396,666
1909-1913, 5 years	1,084,558,787	69,918,875	18,076,980	594,279
1914-1918, 5 years	1,538,877,114	107,481,486	25,634,619	843,220
1919-1923, 5 years	2,576,736,000	1,037,855,886	42,945,600	1,411,137

A Record of Achievement

The above exhibit gives in detail the record of an achievement without a parallel in the history of any commodity, an almost unbroken record of annual increases in crude oil production covering a period of a quarter of a century. The figures show how magnificiently output has responded to the consumption demand. The Geological Survey makes a statement that shows the narrow limits of territory from which this country draws its supply of crude oil from year to year, and when this area is contrasted against the vast undeveloped and untested sedimentary area of this country inspires a firm belief that future devlopment will make as astonishing discoveries of prolific oil fields as has featured any period of the past. The statement follows:

"The result of a canvass of producers of petroleum indicate that the area from which petroleum was produced in the United States in 1921 is 3,900,000 acres. This figure includes an allowance for companies not reporting, made by calculating the acreage for each State on the basis of its known production, using as a factor the ratio of production to acreage as reported by producers. The result is preliminary, pending a more complete investigation."

The table shows 17 continuous annual increases in production. For a concrete idea of this expansion take the monthly average at the end of each five-year period for comparison. In 1898 the monthly average amounted to 4,613,667 bbls., increasing to 8,371,778 bbls., five years later, and to 14,877,280 bbls., at the end of the next five years, advancing to 20,703,582 bbls. in 1913; 29,666,643 bbls. in 1918, and to the unexpected yet gratifying total of 60,477,167 bbls. monthly average in 1923. We must admit that the prodigality with which this country's oil resources have been exploited has not been sufficiently recognized. Out of an original estimated reserve of something like 16,000,000,000 bbls., already over 7,000,000,000 bbls. have been extracted, and the rapid growth in the consumption demand during the last few years increases the gravity of the situation. At the present rate of consumption the estimated unmined supply would be exhausted in 12 years, while if the consumption should increase at the average rate of the last three years, 1931 would see the end of our oil resources. The reverse side to this pessimistic outlook will be given later.

TOTAL PRODUCTION AND VALUE

	Barrels	Value
1884, 26th year of industry, 1st quarter billion	263,830,327	$ 425,873,837
1891 33rd year of the industry, 1st half billion	504,929,201	168,874,263
1900, 42nd year of the industry, 1st billion	1,003,603,205	432,190,537
1909, 51st year of the industry, 2nd billion	2,168,306,632	887,582,304
1913, 55th year of the industry, 3rd billion	3,069,694,605	663,279,075
1917, 59th year of the industry, 4th billion	4,252,644,003	1,247,123,286
1920, 62nd year of the industry, 5th billion	5,429,868,000	2,824,955,000
1922, 64th year of the industry, 6th billion	6,459,581,000	1,709,582,000
1923, 65th year of the industry, 7th billion	7,185,307,000	

Statement by White

Nine billion barrels is the extent of the oil supply in this country remaining in the ground recoverable by methods now in use, according to estimates compiled by the country's "foremost geologists" in a report made public Tuesday, January 17, 1922, by the United States Geological Survey. David White, chief geologist of the Survey explains the careful scientific methods employed in making this the fifth estimate as reliable as precent day knowledge has made possible. It follows:

"Fortunately estimates of our reserves can be made with far greater completeness and accuracy than ever before. During the last eight years a large part of the territory in the United States that may possibly contain oil has been studied in great detail by oil geologists; wildcatting has spread through "prospective" into regions of "possible" and locally and even into regions of "impossible territory," oil fields have been definitely outlined any many new ones discovered, and finally, improvement in methods and special training in the calculation of oil reserves and of the depletion of oil properties have been developed to meet the requirements of the tax laws.

"Accordingly, in order that the public may get the fullest benefit of this newly available information, the United States Geological Survey in March, 1921, invited the American Association of Petroleum Geologists to cooperate with it in a review of the producing, probable and possible oil territory of the United States and in the compilation of an estimate of the petroleum remaining in the ground and recoverable by present methods.

"This invitation was promptly accepted by the association, which designated a number of its ablest members of well known wide experience, good judgment and high professional standing to serve with the oil geologists of the Survey as members of a joint committee.

"The committee responsible for the original preparation of the estimates and finally for the adjustment and revision of the results in joint conference was comprised of F. W. de Wolf, State geologist of Illinois; W. E. Wrather, of Dallas, Texas; Roswell H. Johnson, of Pittsburgh, Pa.; Wallace A. Pratt, of Houston, Texas; Alexander W. McCoy, of Bartlesville, Okla.; Carl H. Beal, of San Francisco, Cal.; C. T. Lupton, of Denver, Colo.; Alexander Deussen, of Houston, Texas; K. C. Heald, of Washington, D. C., and G. C. Mattson, of Tulsa, Okla., all representing the American Association of Petroleum Geologists.

"For the Federal Survey, David White, chief geologist, chairman; W. T. Thom, Jr., A. E. Frath, Kirtly F. Mather, R. C. Moore, State geologist of Kansas, and K. C. Heald. Mr. Heald represented both the survey and the association. These men were assisted in sub-committees by a large number of the leading geologists of the country, including oil company geologists, directors of State geological surveys, and consulting geologists, who were specially familiar with the regions considered.

Estimated Oil Reserves

State—	Barrels
New York	100,000,000
Pennsylvania	260,000,000
West Virginia	200,000,000
Ohio	190,000,000
Indiana and Michigan	70,000,000
Illinois	440,000,000
Kentucky, Tennessee, northern Alabama and northern Miss.	175,000,000
Missouri, Iowa, North Dakota, Wisconsin and Minnesota	40,000,000
Kansas	425,000,000
Oklahoma	1,340,000,000
Northern Louisiana and Ark.	525,000,000
Texas, except Gulf Coast	670,000,000
Gulf Coast Texas and Louisiana	2,100,000,000
Colorado, New Mexico and Ariz.	50,000,000
Wyoming	525,000,000
Montana, Nebraska and South Dakota	100,000,000
Utah, Nevada, Oregon, Washington and Idaho	80,000,000
California	1,850,000,000
Eastern gulf coastal plain and Atlantic coast States	10,000,000
Total	9,150,000,000

Another Estimate

The oil reserves to be found in the regions of the earth where oil has already been proved to exist in commercial amounts and in regions in which oil has not yet been proven to be present in commercial amounts, were in 1920 estimated by Eugene Stebinger and David White at 70,000,000,000 bbls. It is stated this calculation was based upon a review of the available data as to the regional geology the structure, the character and composition, thickness, relations, and alterations of the sedimentary deposits of the different basins, the information as to local and minor folding, and as to surface indications of oil, and finally the records as to developmental tests or actual production. As stated at time of publication, this estimate is necessarily highly speculative and, in spite of the care and study given to their preparation, are subject to great range of error, especially with reference to non-productive countries and to those concerning which the geologic information is meager. They are avowedly conservative.

Having considered the wealth of oil in foreign countries which, according to the very conservative calculations, is given above, it is sufficient to meet the present rate of consumption requirements of the aggregate countries outside the United States for 215 years. In 1921, a year of stagnation of American production, we drew out over 472 million—practically half a billion—barrels of oil from our reserves. Contrasted with our more than 5 per cent rate of annual depletion, the rest of the world withdrew in 1921 not much over 280,000,000 from its store of over 60,000,000 bbls., or less than half of 1 per cent of its reserves recoverable by present methods. In other words, the reserves of the rest of the world would stand the present drain for over two centuries. From the standpoint of world distribution of oil and the relation of our reserves to those of the rest of the world, an error of 2,000,000,000 or 3,000,000,000 bbls.—3 to 5 years supply—in the committees estimates of the oil reserves of the United States is comparatively insignificant.

During Past Three Years

In view of the results of development in this country during the first three years during which time the annual production was increased 282,797,000 bbls. and the total 578,216,000 bbls., with the completion of over 7,500 less new wells, and the further fact that the production was checked in 1923 by fully 100,000 bbls. a day shut-in in California, and pipe line acceptances of crude oil in practically all fields east of the Rocky Mountains limited to one-half of daily output of wells, seems to make it imperative that the Survey revise its 1922 estimates of the unmined oil reserves in this country.

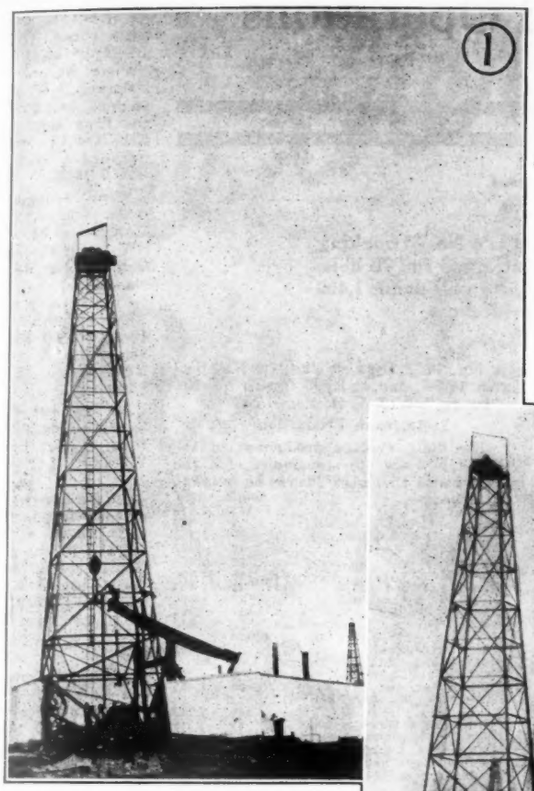
In 1908, David T. Day, for years director of the petroleum division of the United States Geological Survey, calculated the total amount of oil originally available in the ground as ranging between a minimum of 10,000,000,000 and a maximum of 24,000,000,000 bbls. In 1915, Dr. Ralph Arnold placed the original supply of oil at 9,098,567,000 bbls., of which he believed 5,763,100,000 bbls. remained in the ground at the end of 1914. The Geological Survey published an estimate in 1916, in which it stated the reserve oil supply available at the end of 1915, to be 7,629,000,000 bbls. In the spring of 1917, the same geologists estimated the total oil reserve available in the ground at 6,182,000,000 bbls. In a paper presented by David White, chief geologist of the United States Geological Survey, at the annual meeting of the Society of Automotive Engineers, held in New York City, included a statistical table showing the survey's latest figures of the unmined supply of petroleum in the United States. According to these figures, the total available oil left in the ground at the beginning of 1919, is placed at 6,740,000,000 bbls.

Eighty Per Cent Not Recovered

The following excerpts are from an article contributed by K. C. Heald, of the National Research Council and United States Geological Survey, Washington, D. C., which appeared in The Oil and Gas Journal issue of October 18, of this year: "After a new oil pool is discovered it is drilled up, and as the edges of the pool are approached in this process, more dry holes are added to those that result from wildcatting. If there is gas pressure the wells flow for a while. Then they are pumped, with production stimulated by all means now understood. Finally the wells and the field are abandoned as dry. And when the field is thus abandoned, the operator leaves behind him in the sand from 80 to 90 per cent of the oil. In one Wyoming field there can be no doubt that at least 175,000,000 bbls. of oil, and probably twice that amount are present in the oil sands, but it is believed that present methods of extraction will obtain less than 7,000,000 bbls., leaving behind 168,000,000 bbls. or more. In view of this enormous loss it is safe to predict that in the future the average extraction will be at least doubled.

"In the past this loss has not greatly disturbed the operators, and the refiners

(Continued on Page 90)



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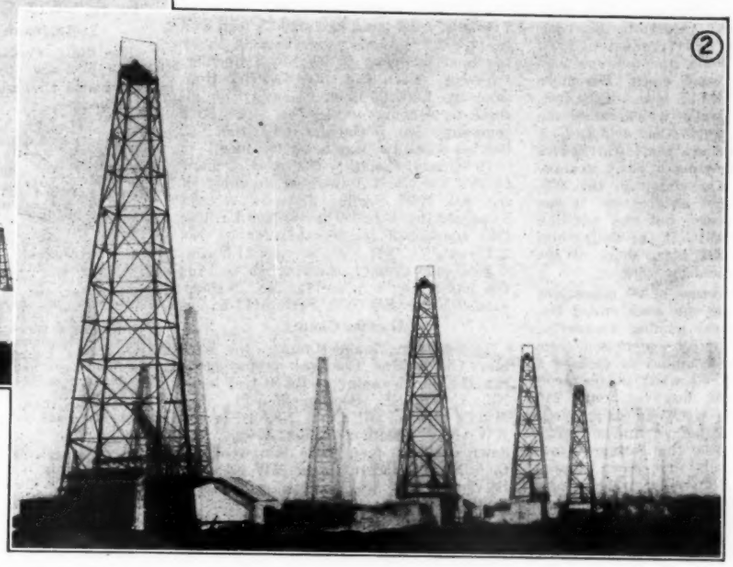

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Oklahoma Field Operations

By C. D. Lockwood

Osage County has best producer of the week, the Tidal Co.'s No. 31 making 94 bbls. an hour; Tulsa Country Club Pool gets next best, good for 70 bbls. an hour; Hull's offset to Stroud discovery in Lincoln County still doing 1,400 bbls. daily; Wewoka, Tonkawa and Burbank continue to decline.

The Christmas season was observed quietly in the Oklahoma fields, all three of the major areas continuing their regular downward trend. Burbank showed a loss of 1,256 bbls. daily production from the usual 1,113 wells, the average production for the week ended December 26 having been 72,711 bbls. Tonkawa, with 5 additional wells, which raised the number of producers in that field to 615, declined only 284 bbls., the latest figures from that field showing a daily average of 44,623 bbls. The slump in the Wewoka Field was not as great as it has been for some weeks, but the addition of one producer still left the daily total of 10,986 bbls., 891 bbls. short of the figures for the preceding week.

There was a decrease of 20 operations in the state during the week ended December 22, the total number amounting to 1,291. The locations increased from 53 to 56, and the completions showed a gain of one, with 40 wells in that column. There were, however, only 216 rigs in the latter week, in comparison with 221 the week before, and only 527 wells drilling, while the former figure was 544. The wells shut down showed a loss of 2 with 452 wells in that stage.

A real oil pool seems to have been opened up at last in Lincoln County, as the well which the J. A. Hull Oil Co. brought in on Christmas day, in the NW cor. Section 12-14-6, offsetting the discovery well of the Union Petroleum & Supply Co., was still making 1,400 bbls. daily at last reports Monday from sand at 4,077-90 feet. The discovery well, in the SE cor. Section 2-14-6, was deepened 6 feet to a total depth of 4,094 feet and was making 570 bbls. daily. Offsets to these wells are going ahead rapidly after considerable trouble, the Roxana Petroleum Corp.'s No. 1 Zollers, SW cor. Section 1-14-6, having found a sand, carrying 1,500,000 feet of gas at 2,838-60 feet. The same company's No. 1 Jackson, NE cor. Section 11-14-6, also picked up a gas sand at 2,845-65 feet.

Best Completion of Week

The best completion of the week was in the Osage, southeast of Hominy, where the Tidal-Osage Oil Co. brought in its No. 31 in the CEL NE SW SE, Section 34-22-10, which flowed 94 bbls. an hour from sand at 2,256-92 feet.

The Peer Oil Corp. took the place of the Munn Bros. this week in keeping the Tulsa Country Club Pool in the limelight, bringing in its No. 2, in the NE cor. SE NE, NW, Section 28-20-12, for 70 bbls. an hour initial production. Monday, the three wells on the Peer lease made 1,891 bbls. and it was estimated that Nos. 1 and 3 contributed 600 bbls. of this amount, leaving about 1,300 bbls. to the credit of No. 2. The Peer Corp. is going ahead in its development of this pool, having made locations and erected rigs for tests in the NE cor. of Section 28, and in the SE cor. of Section 21-28-12.

Tillman County Activity

Tillman County came in for an unusual amount of attention during the week with a couple of 100-bbl. producers and another that was good for 150 bbls. The Continental Oil Co.'s No. 4 River Bed, SW cor. NW, Section 8-5s-14w, was estimated at the former figure when sand was found at 1,530 and drilled to 1,544 feet. The Oklahoma-Texas Refining Co. had the other 100-bbl. well in its No. 3 Owen, CSL SW SE NE, Section 7-5s-14w, from sand at 1,526-38 feet, and the 150-bbl. producer was brought in by the same company in its No. 3 Goehler, SW cor. NE, Section 4-5s-14w, from sand at 1,607-23 feet. Gravity of all three tests above 40 degrees. The same company's No. 5 Goehler, CSL SE NE, Section 4-5s-14w, was being spudded.

In Grady County, Walter Critchlow located his No. 1-A Cochran, in the NW cor. SW NW, Section 27-3n-5w, a twin to an old dry hole. The Walker Drilling Co., abandoned the location for its No. 1 Howard, C NE SW, Section 21-3n-5w.

In Caddo County, the English Drilling Co. had a rig in place for No. 2 Headlund, SE cor. SW NE, Section 11-5n-9w.

Hughes County

In southern Hughes County, the Kimbley Oil & Gas Co. was preparing to run the 5-inch casing at 3,350 feet in its No. 1, SE SE, Section 35-5-11. The Middle States Oil Co.'s No. 1, in the NW NW, Section 13-6-11, was shut down at 3,510 feet. The Kingwood Oil Co.'s No. 1 Barnett, in the NW NE SW, Section 7-7-10, was still going ahead at 5,148 feet.

The Dixie Oil Co. had a rig on the ground for No. 1 Irvine, NW SE SE, Section 18-8-10, and W. C. Newman was rigging up his No. 1 Pike, in the SE SE, Section 31-8-12. The Gladys Belle Oil Co. and others had a rig built for No. 1 Brown, SE SW NW, Section 8-9-9, and the Gypsy Oil Co. was building a rig for No. 1 Bruner, C SW NW SW, Section 16-9-9.

The Gilcrease Oil Co.'s well, No. 1 Bruner, in the NW NE, Section 20-9-9, was still holding up, making 115 bbls. daily. The Tidal-Osage Oil Co.'s No. 1 Baker, SE SW SE, Section 4-9-11, was drilling at 1,300 feet, and the Flesher Petroleum Co.'s No. 1 Smith, NW NE NW, Section 8-9-12, was underreaming the 6-inch at 3,312 feet. The Mid-Kansas Oil & Gas Co.'s No. 2 Bruner, SW NE NE, Section 9-9-11, was shut down at 2,948 feet.

In Grant County, Fleeger and others abandoned their No. 1 Sheldon, CEL NW SE NE, Section 20-27-7w, as dry at 1,550 feet, having missed the 1,300-foot gas sand. Travis and others were drilling their No. 1 Williams, NE cor. SW, Section 5-26-4w, at 1,400 feet.

In Pottawatomie County, a duster was abandoned by J. F. Boggers and others, their No. 1 Younker, NW cor. SE, Section 21-9-4, having been found dry at 2,792 feet. Davy & Detrick were fishing at 2,800 feet in their No. 1 Barnes, SE NW, Section 10-6-2. The Magnolia Petroleum Co. had the 6-inch casing set at 2,699 feet and was drilling at 2,710 feet in its No. 1 Vinson, C SE SW NW, Section 18-7-5.

In northern Seminole County, the Pawnee Oil & Gas Co.'s No. 1 Marks, SW cor. NE NW, Section 26-10-6, was dry and abandoned at 1,600 feet. In the southern part of the county, J. H. Harvey was spudding No. 1 Charty, C NE NW, Section 33-6-6. McDougal and others were drilling at 1,650 feet in their No. 1 Dindy, C SW SW, Section 20-6-7. W. R. Ramsey was drilling at 1,900 feet in his No. 1 Dean, in the NE NE, Section 13-7-7, and at 3,595 feet in his No. 1 Dindy, NW NW, Section 6-7-8.

Burbank Production

The daily average production in the Burbank Field, by companies, for the week ended December 26 was as follows:

Company—	Wells	Bbls.
Carter Oil Co.	165	7,495
Comar Oil Co.	7	295
Cosden Oil & Gas Co.	68	1,716
Devonian Oil Co.	16	467
Gardner Pet. Co.	20	864
Gypsy Oil Co.	149	11,290
Kewanee Oil & Gas Co.	12	185
Laurel Oil & Gas Co.	16	466
Lorraine Pet. Co.	15	353
Midland Oil Co.	5	143
Mid-Kansas Oil & Gas Co.	20	2,928
Peters & Oliphant	1	162
Phillips Pet. Co. and Delmar Oil Co.	2	2,264
Phillips Pet. Co.	28	1,501
Phillips Pet. Co. and Skelly Oil Co.	141	7,789
Prairie Oil & Gas Co.	90	2,308
Producers & Refiners Corp.	28	807
Roxana Pet. Corp.	57	941
Simons, Moore and others	29	497
Sinclair Oil & Gas Co.	133	4,747
Skelly Oil Co.	4	1,189
Tidal-Osage Oil Co.	41	1,195
Twin State Oil Co.	8	271
Total	1,053	49,873
Kay County—		
George S. Bole	1	787
Carter Oil Co.	3	2 365
Comar Oil Co.	7	2,517
Cosden Oil & Gas Co.	3	2,242
Gypsy Oil Co.	6	2,364
Laurel Oil & Gas Co.	1	5
Phillips Pet. Co. and Delmar Oil Co.	9	4,555
Mid-Kansas Oil & Gas Co.	4	2,288
Pure Oil Co.	1	396
Roxana Pet. Corp.	1	635
Dye-Thomalson and others	5	501
Skelly Oil Co. and Phillips Pet. Co.	12	1,431
Sinclair Oil & Gas Co.	1	172
The Texas Co.	1	1,012
Twin Sate Oil Co.	5	1,608
Total	60	22,838
Total Burbank	1,113	72,711
Total last week	1,113	73,967
Difference	None	1,256

Daily average pipe line runs from the field during the week were as follows: Gulf Pipe Line Co., 14,539 bbls.; Cosden Pipe Line Co., 6,323 bbls.; Kay County Gas Co., 3,588 bbls.; Osage Pipe Line Co., 2,475 bbls.; Oklahoma Pipe Line Co., 12,532 bbls.; Prairie Pipe Line Co., 5,413 bbls.; Sinclair Pipe Line Co., 1,106 bbls.; Moore Refining Co., 2,014 bbls.; Empire Pipe Line Co., 1,100 bbls.; Ozark Pipe Line Co., 2,289 bbls. Total, 51,379 bbls.

Daily average runs to storage were as follows: Standish Pipe Line Co., 10,930 bbls.; Mid-Kansas Oil & Gas Co., 3,867 bbls.; Dye-Thomalson and others, 326 bbls.; Twin State Oil Co., 1,100 bbls.; George S. Bole, 537 bbls.; Sinclair Oil & Gas Co., 4,572 bbls. Total, 21,332 bbls.

Tulsa County

Some new work was in progress in Tulsa County, a rig being in course of construction for C. H. Terwilleger's No. 1-A Harrison, NW cor. SW NW, Section 8-19-12. Shaffer Oil & Refining Co. was moving in tools for its No. 2 Bruner, CNW NE SE, Section 6-19-12. The same company's No. 1 Bruner, C SW NE SE, in the same section, was making 408 bbls. natural from sand at 2,026-38 feet.

Block & Thompson had a rig built and were rigging up their No. 1 Bruner, NW cor. SE SE, Section 6-19-12. The Sand Springs Home was spudding its No. 3 Bruner, CEL NE NE SW, in the same section, and was rigging up tools for its No. 4 Bruner, SE cor. NW SE, in Section 6. The same company was building a rig for its No. 1 Twin Cities, CSL NE NW SE, and was spudding No. 2 Twin Cities, CWL NW SE, and was drilling at 2,100 feet in its No. 1 Springs, SW cor. NE, all in Section 6-19-12. No. 2 Springs, NW cor. SW NE, in the same section, was good for 4,000,000 feet of gas from sand at 1,649-54 feet. The Echo Oil Co. was rigging up tools for its No. 1-A Grayson, C NE SE NE, Section 5-19-12.

Three wells in the county were shut down, including the Associated Producing & Refining Corp.'s No. 1-A, CNL NE SW SW, Section 13-18-12, which was shut down at 515 feet; Smith and others' No. 3 Parks, C NE NW, same section, at 2,004 feet; and the Vick Oil Co.'s No. 3-A Perkins, C NW NE, Section 18-18-13, at 850 feet. The Fletcher Petroleum Co.'s No. 3-A Tiger, C WL SW NE, Section 12-18-12, was drilling at 1,200 feet.

In Wagoner County, the Stone Bluff Syndicate had a 12-bbl. natural producer from sand at 1,875-80 feet in its No. 1 Wheat, CNL NW SW, Section 18-17-15.

In the Osage

In the Osage, a gas sand was topped at 1,930 feet in the American Pipe Line Co.'s No. 89, C NE SW, Section 30-28-10, and it was good for 750,000 feet of gas, at a total depth of 1,973 feet. The Owen-Osage Oil Co. abandoned its No. 265, CWL NW NW NE, Section 19-24-11, as dry at 2,035 feet.

A rig was up for A. G. Oliphant's test, NW cor. SE, Section 32-24-9, and rigs were on the ground for the Bed Bank Oil Co.'s No. 4, CNL NE NW, Section 29-23-8, and for Gray and others' No. 2, CNL NE SW, Section 23-22-8.

The Owen-Osage Oil Co. was drilling at 300 feet in its No. 269, SW cor. SE NE, Section 3-23-11, and its No. 263 was making 5,000,000 feet of gas from sand at 1,610-35 feet, location being in the CWL NW, Section 17-22-11.

A couple of tests were spudding, one by the Sand Springs Home, No. 1-A, in the SW cor. NE, Section 28-20-11, and another by Markham & Breene, No. 2, in the CWL SW NW, Section 23-21-10. The Oklahoma Natural Gas Co. had a machine in place for its No. 635, SW cor. NW NE, Section 28-20-12, a twin to No. 4.

A machine was being moved in for the Pawhuska Petroleum Corp.'s No. 7, CSL SE NW, Section 17-25-9, and the Tidal-Osage Oil Co.'s No. 1, NW cor. SW, Section 28-23-9, an old well, was drilling at 2,203 feet.

A rig was in place for a test by John Rogers and others in their, No. 1 Lewis, SE cor. SW NE, Section 11-24-9. The Service Oil Co.'s No. 1 Donnell, SE cor. SW NW, Section 12-30-9, was shut down at 1,042 feet, and the Orr Drilling Co.'s No. 1 Meents, NW cor. SW, Section 26-29-10, was also shut down at 1,355 feet. Van de Venter's No. 1 Thompson, SW cor. Section 26-29-9, was drilling at 1,200 feet.

Burbank Area Quiet

The Burbank area remained in its usual passive state, reporting practically nothing of consequence. The Texas Co. was carrying a hole full of water in its No. 2 Munroe, NW cor. SW, Section 3-27-5, the water having been encountered at 1,380 feet. The well was drilling ahead at 1,400 feet. The Carter Oil Co. was drilling at 1,635 feet in its No. 1 Pappan, SW cor. NW, Section 3-27-5, with the 10-inch casing set at 1,375 feet. In the same section, the Phillips Petroleum Co. had a rig on the ground for its No. 1 Cooper, NE cor. NW.

Three wells were drilling and 1 was rigging up in Section 4-27-5. One was George S. Bole's No. 3 Gaston, CEL SE NE NW, which was below 400 feet, and his now 4 Gaston, NE cor NW, which was at 610 feet. The Roxanan Petroleum Corp.'s No. 3 Pappan, CWL NW SW NE, was drilling at 550 feet, and No. 5 Patton CWL SW NW NE rigging up.

The Mid-Kansas Oil & Gas Co. was fishing for tools at 1,120 feet in its No. 4, CNL NE NW SE, Section 9-27-5, and

(Continued on Page 98)

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North-Central Texas Field

By Dan F. Dugan

Production declines 1,885 bbls. during week. Chicago-Texas Oil & Gas Syndicate's No. 1 Durham, near Stirling City, good for 50 to 100 bbls. but may be deepened. Murchison & Fain's No. 1-B Wilson, 650 bbls., extends Geraldine Pool slightly. Maer and others' No. 1 Wilson makes 512 bbls.

FORT WORTH, Tex., Dec. 31.—Another daily slump in production runs was reported for the past seven days from the North Central Texas Field. Daily runs for the week were reported at 110,215 bbls. as against 112,100 bbls. daily for the previous week, a loss of 1,885 bbls. daily. The gains and losses were about evenly distributed throughout the field, as to pools, with Burkburnett showing a gain of 275 bbls, Iowa Park 145 and Eastland 180 and the wildcat pools 290 bbls.

There is some talk of premium contracts being made during the past 10 days by some of the small refiners that move their crude supply by tank cars, but no positive evidence to that effect can be found.

Stirling City Well

It is reported from San Angelo that more than passing interest is centered on the Chicago-Texas Oil & Gas Syndicate's No. 1 Durham, 1½ miles southwest of Stirling City, Section 18, Block 12, Southern Pacific Railway Co. survey. Drilling at 1,423 feet, an oil sand was picked up and drilled 14 feet. It is reported the operating company is undecided whether to drill deeper or shoot at the present producing depth. The well might be good for from 50 to 100 bbls. daily in its present condition.

The oil is around 34 gravity and said to be the shallowest production yet obtained in that territory. The well is on a direct line between the Mitchell and Reagan County fields, and, according to geologists, is on the Marathon fold.

Development work in the Moran shallow field in Shackelford County continues uninterrupted during the holiday season. The principal item is the beginning of construction by the Humble Pipe Line Co. of a four-inch line from its line in the Moran north field, Sedgwick Pool, to Wayland, Stephens County, where it will connect with another main line, a distance of approximately 25 miles.

The announced purpose of this second line is to care for the black oil in the Sedgwick Pool, so as to avoid handling the two grades, the light and black oils, through the same line. The gravity of the light oil ranges from 35 to 40, of the black from 30 to 35. The building of this new line also indicates that there will be more drilling in the vicinity of the Humble Oil & Refining Co.'s No. 1 Parrish, the only semi-deep producer in that section.

Stephens County

Stephens County reported three producing completions, although none were large or particularly important developments. Two were Mid-Kansas producers in North Stephens, No. 2 Cowger, good for 100 bbls. at 3,270 feet, after a shot, and No. 2 G. W. Hill, a 55-bbl. well at 3,180 feet. In South Stephens Price & Russell's No. 2 Bruce is reported swabbing 300 bbls. at 2,085 feet.

Archer County

This section of the North Central Texas Field shows a general speeding up in field operations for the week, resulting in the completion of several good producers and the semi-completion of a number of tests certain to make commercial wells which will extend present producing territory a considerable distance.

One sale of considerable importance is reported, the Shamrock Oil Co. purchasing the holdings of the Swastika Oil Co. and the Langford-Tucker interests, consisting of 600 acres, in the J. F. Richardson ranch, with eight producing wells with a daily production of 400 bbls., for a consideration of around $250,000.

Several tests showing for good producers, judging by their initial flows, are Murchison & Fain's No. 1-B Wilson, which is flowing and swabbing nearly 650 bbls. at 1,595 feet, and expected to do half that much when it goes on the pump. This well effects a slight eastward extension of the 1,600-foot pay in the Geraldine Pool, which has furnished a large number of good producers in the past two weeks.

The Kentucky Oil Corp.'s No. 1 Wilson, Block 311, swabbed 500 bbls from a sand at 1,590 feet.

Murchison & Fain this week abandoned as dry their No. 1 L. F. Wilson at a total depth of 1,625 feet. The well was in the southwest corner of Lot 24, Block 620, Geraldine Townsite, south of the Johnson, Jetter and other producing wells.

To the east of the Johnson producing lease the Dorain and McCarty Oil Co.'s No. 1 Wilson is standardizing with 900 feet of liquid in the hole and has all the earmarks of a good producer.

The Swastika district in the south part of the county is showing an increased amount of activity and several new tests are drilling. This week's development resulted in the completion by the Clark & Clayton Co. of No. 2 Richardson for a 45-bbl. pumper, from the sand at 1,380 feet.

The largest producing completion reported for the week is the Maer and others' No. 1 Wilson, which gauged 512 bbls. in 24 hours at 1,595 feet.

Completions This Week

There were no completions of producing importance completed in this territory, but there is a promise of several during the coming week. The stiffening of the crude market has stimulated activity in the wildcat sections, and a number of tests shut down since the early summer are making repairs with a view to resuming operations after the first of the year.

At present the most active spots where any degree of development is being done are on the leases controlled by the largest producing companies. A late report from Wichita Falls credits the Carter-Inland Oil Co.'s No. 1 K. & K., located in the center of Block 53, in the Tigert survey, just north of the Archer County line in Wichita County, with showing 150 bbls. at 1,795 feet.

The well is a short distance south of the Watkins shallow producers and north of the Freeman-Hampton Pool in Archer County, and 1 mile southeast of the old Gilliland test drilled during the boom days, which created great excitement at that time due to the showings made, and for a while promised a 3-mile extension to the K. M. A. Field. It later proved a failure and was abandoned.

The completion of Shappell and others' No. 1 Jackson, 10 miles south of Wichita Falls, is expected this week, following completion of a line being laid by the Texas Pipe Line Co. to the test. In the meantime a standard rig is being erected over the hole to complete. The well has made several flows, despite the fact that it has not been entirely cleaned out. It has also made some water, but not to an appreciable amount. There was considerable excitement when oil was first found in this test and some offset acreage changed ownership shortly after the first flow, but at this time the exact producing states of the well is not known.

Another important test mentioned last week is Kruger and others' No. 7 Waggoner, which promises an extension about 1,000 feet to the south of the Rowe Drilling Co.'s No. 1 Waggoner, which is producing 70 bbls. oil and water from this depth. The well is in Section 14, H. T. C. R. R. survey, immediately south of Electra. The completion of this well as a commercial producer will no doubt cause a further development of this pay depth in that territory.

Burkburnett-Hirschi

A completion in these pools was the Sun Oil Co.'s No. 25 Hirschi, in Block 834. The top of the pay was encountered at 1,825 feet and it is swabbing at the rate of 125 bbls. a day.

To the west of the Barkley-Meadows tract, the Gulf Production Co.'s No. 15 E. A. Dale is on the sand at 1,814 feet with casing set and cemented, due for completion the coming week.

The Pigg Oil Co.'s No. 18 Hirschi is a completion with a daily production of 300 bbls. at the regulation pay depth around 1,870 feet.

The Lone Star Gas Co.'s main gas line from Oklahoma to North Texas, and which has been out of commission for some months, will again run gas right after the first of the year. The October floods washed out the line over Red River and no gas was run from the Stephens, Cotton and Comanche County fields until December 10. At that time a temporary line across the river had been installed. The Lone Star Co. had been taking approximately 25 per cent of its gas from that territory.

During the interference with the Lone Star's Oklahoma supply, North Texas cities and towns were saved a gas famine through the company's new lines to the Palo Pinto and Eastland County fields in Texas, which went into operation shortly before the break in the Oklahoma line.

Completions Reported

Completions reported in the Burkburnett and Hirschi pools are the Perkins and others' No. 2 Saunders, 130 bbls. at 1,870 feet; Gulf Production Co.'s No. 14 Dale, 160 bbls. at 1,865 feet; Howell and others' No. 1 Van Horn, dry at 2,000 feet; Pigg Oil Co.'s No. 18 Hirschi, 300 bbls. at 1,890 feet; Sun Oil Co.'s No. 25 Hirschi, 125 bbls. at 1,860 feet.

Drilling—Baldwin Brothers' No. 12-C Kennedy, drilling in brown shale at 1,530 feet; Gulf Production Co.'s No. 15 Dale, drilling in shale at 1,800 feet; No. 1 Saunders, drilling at 1,710 feet, Lewis and others' No. 2 George, shut down for a cable tool rig at 2,575 feet; McDabb Oil Co.'s No. 2-A Saunders, finished standardizing and drilling just above production depth at 1,815 feet; Magnolia Petroleum Co.'s No. 22 Holcomb, drilling at 875 feet; No. 20 Hortoin, underreaming 8¼-inch casing at 895 feet; John O'Neil's No. 5 Saunders, set and cemented 6⅝-inch casing on top of a broken sand at 1,823 feet; Perkins and others' No. 3 Saunders, set and cemented 6⅝-inch casing at 1,812 feet, sand showing some oil at 1,820 feet; No. 4 Saunders, drilling in brown shale at 1,220 feet; Pigg Oil Co.'s No. 19 Hirschi, drilling at 1,795 feet; Richardson and others' No. 1 Case, at 1,670 feet; Weldman and others' No. 1 Wolf, drilling in blue shale at 1,880 feet.

Wichita-Electra

Completions—Holcomb and others' No. 1 Zeiset, dry at 1,690 feet; Magnolia Petroleum Co.'s No. 5-B Waggoner, 15 bbls. at 1,670 feet; Kentucky Oil Corp.'s No. 1 Davis, dry at 2,008 feet; Lucky Hill Oil Co.'s No. 1 Lautsenlager, dry at 2,005 feet.

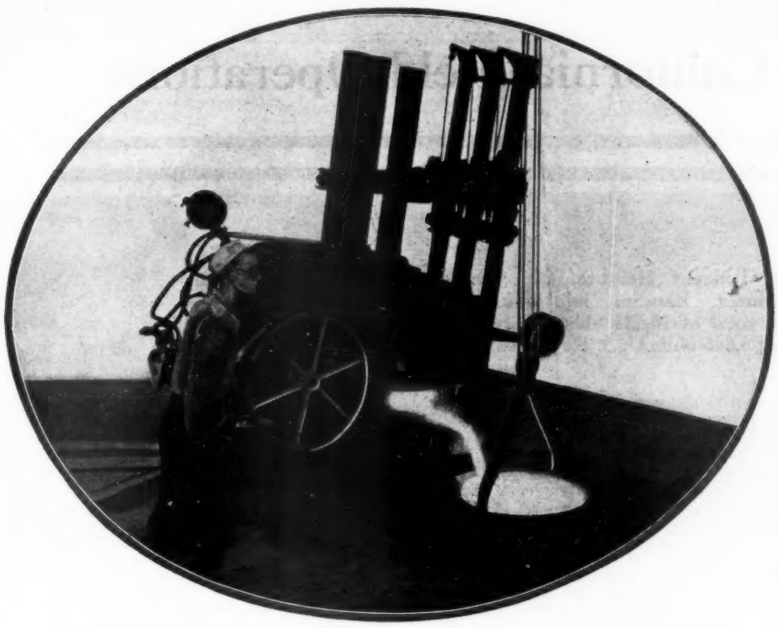
Drilling — Magnolia Petroleum Co.'s No. 7 Douglas, running 8¼-inch casing at 705 feet; Memphis Petroleum Co.'s No. 3 Honaker, showing for around 30 bbls. production from a sand at 1,060 feet; Bass and others' No. 6 Waggoner, drilling in shell rock at 1,890 feet; Kinpire Gas & Fuel Co.'s No. 26 Burnett, drilling to 1,656 feet, plugged back to 1,636 feet and rigging up to test a sand at that depth; Four States Oil Co.'s No. 7 Jennings, underreaming 10-inch casing at 975 feet; Fisher and others' No. 3-B Fisher, bailing and testing an oil sand at 1,705 feet; Gulf Production Co.'s No. 1 Miller, drilling at 105 feet; Houston Oil Co.'s No. 14 Waggoner, drilled out a plug and testing a sand at 1,500 feet; Hartford Trust Co.'s No. 6-A Burnett, drilling at 820 feet; No. 12 Burnett, drilling in brown shale at 1,335 feet; No. 78-B Burnett, at 830 feet; No. 1-A Burnett, drilling in shale at 2,120 feet; Noel and others' No. 1 Waggoner, drilling a water sand at 2,065 feet; Sproles and others' No. 1 Fisher, rigging up to drill in an old abandoned 800-foot hole; Simms Oil Co.'s No. 14 Burnett, pulled 5⅜-inch casing and drilling at 1,700 feet; Texhoma O. & R. Co.'s No. 12-F Waggoner, setting 6⅝-inch casing on top of an oil sand at 1,475 feet; No. 1-C Burnett, coring an oil sand at 1,550 feet; No. 28-A Waggoner, drilling in shale at 1,630 feet; Carter and others' No. 3 K. & K., drilling at 480 feet; Parker Bros.' No. 1 Love, cleaning out at 810 feet.

Archer County

Completions—Chenault and others' No. 5-C Wilson, 90 bbls. at 1,580 feet; Clayton and others' No. 2 Richardson, 45 bbls. at 1,375 feet; Maer and others' No. 1 Wilson, 512 bbls. at 1,592 feet; same company's No. 7 Mrs. Carter, 110 bbls. at 1,380 feet; Murchison and others' No. 1 Wilson, dry at 1,625 feet; Payne and others' No. 1 Parrish, 25 bbls. at 1,565 feet; Underwood Drilling Co.'s No. 3 Wilmot, 80 bbls. at 1,595 feet.

Drilling—The Texas Co.'s No. 10 Carter Bros., moving in a company machine to drill deeper at 1,570 feet; Barkley and others' No. 2 Wilson, drilling in rock at 1,825 feet; Bohler and others' No. 3 Wilmot, drilling at 640 feet; No. 1 Wilson, drilling in brown shale at 1,445 feet; Boyd and others' No. 1 Carter, drilling in blue shale at 1,600 feet; Brannon and others' No. 1 Wilson, drilling at 205 feet; Bridwell and others' No. 1 Wilson, setting 6⅝-inch casing at 1,292 feet; Camp Oil & Gas Co.'s No. 2 Wilson, standardizing on top of an oil sand at 1,000 feet; Nos. 3 and 4 Wilson, drilling around 150 feet; Dale and others' No. 7 Wilmot, bailing and testing an oil sand at 1,000 feet; No. 3 Wilson, drilling at 155 feet; Dixon and others' No. 1 White, trying to set a plug, sand at 1,595 feet, showing some oil; Featherstone and others' No. 7-C Wilson, standardizing on top of an oil sand at 1,597 feet; No. 5-C Wilson, drilling at 1,205 feet; Graham and others' No. 1 Wilson, drilling in soft rock at 700 feet; Gould and others' No. 2 White, drilling in rock at 1,100 feet; Gwynn and others' No. 6 Mrs. Carter, drilling at 155 feet; Hardeyeste and others' No. 1 Parrish, standardizing on top of an oil sand at 1,660 feet; Hudspeth and others' No. 2 Ambercrombie, drilling at 1,025 feet; Jetter and others' No. 2 Wilson, drilling at 955 feet; Johnson and others' No. 2 Wilson, bailing and testing an oil

(Continued on Page 67)



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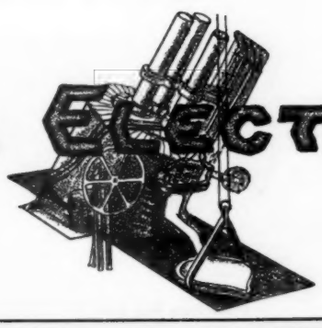

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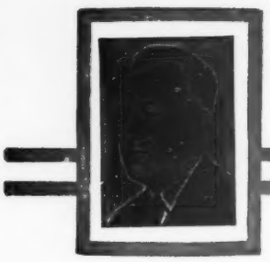


California Field Operations

By L. P. Stockman

New deep zone at Rideout Heights, Old Whittier district. Whitely Oil Co. gets 2,500 producer. Bandini Field looks promising. Torrance shows 11 completions for total of 10,521 bbls. Universal Consolidated Oil Co. has 3 wells aggregating 3,646 bbls. U. S. Royalties 3 producers making 2,150 bbls.

LOS ANGELES, Cal., Dec. 29.—The Whitley Oil Co. furnished the surprise of the week by bringing in its well No. 6 at Rideout Heights on the outskirts of the old Whittier Field with an initial production estimated to be around 2,500 bbls. Because of the inability, however, of the O'Donnell Refining Co. to handle more than 1,000 bbls. a day, it has been beaned down to approximately this figure. The new well blew in early in the week after the bit had penetrated only a few feet into the oil sand. The pay was struck at 4,265 feet and there were 4,240 feet of 4½-inch casing in the hole. The well, in addition to making an exceptionally large flow, is producing an unusually high gravity oil testing 35.1 degrees, comparable to the light gravity crude produced from the Meyer zone at Santa Fe Springs. The gas pressure is also very high, about 750 pounds.

Three years ago the immediate territory was given up as small and not capable of producing oil in commercial quantities. It is reported that the Whitley Oil & Refining Co. spent over a million dollars developing the acreage but, notwithstanding this fact, the company secured only five small wells whose aggregate production has never been much better than 300 bbls. a day. All of them, however, were finished in the upper zone and were very costly on account of mechanical trouble and water difficulties. J. E. O'Donnell and his associates came to the aid of Whitley Oil & Refining Co. and resumed operations after a short delay. A year and a half was spent in drilling this new gusher which encountered practically all of the difficulties associated with drilling.

The first well drilled on this property by the Whitney Oil & Refining Co. was No. 1, which was finished at 3,202 feet and resulted in a 300-bbl. producer. Subsequent wells drilled in 1920 and 1921 brought small production from depths between 3,025 and 3,300 feet.

After Many Failures

Well No. 6, the present gusher, was located by Eric A. Starke to be carried down as a deep test and it was spudded in July 5, 1922. Doctor Starke, who located all six wells on this lease, is a prominent Los Angeles geologist and engineer, formerly being chief geologist for the Standard Oil Co. of California. Although the Union Oil Co., the National Exploration Co., Walter P. Temple, the Mascot Oil Co. and several others drilled in the immediate vicinity they all withdrew after being satisfied that their test wells, drilled to around the 3,900-foot mark, were dry. It was due to the favorable report and insistent efforts of Doctor Starke that this property was eventually developed. J. E. O'Donnell was criticized for his efforts to develop production in this area previously condemned by several prominent geologists, but, today, instead of being criticized, he is being showered with congratulations, as he and his associates have somewhere in the neighborhood of 300 acres under lease. To attempt to estimate the productivity or probable limits of the new deep zone is as difficult as attempting to estimate future State production. Opinions vary, however, as to the importance of this well, but, since it came in doing twice as much as the Union's new Compton wildcat, its importance should not be under estimated.

This immediate area, together with the new field at Compton, will probably be the center of interest during the next six months, at the expiration of which time operators will have a good idea whether or not the State will be faced with another overproduction of crude during the latter part of 1924 and during 1925. It is probable that O'Donnell will deepen some of the other five wells on this lease within the near future if it is possible to do so and this development work will undoubtedly be watched very closely.

Bandini Looks Promising

In addition to the new Compton Field and the discovery of this deep zone at Rideout Heights, the territory in the vicinity of Bandini, several miles northwest of Santa Fe Springs, looks exceedingly promising. Operators who were beginning to become very optimistic over the prospects of smaller production and higher prices during 1924 are very much concerned with the development of these three districts and the effect which they will have on future production. The Oakridge Oil Co.'s No. 1 Rossi at Bandini produced a very nice core several weeks ago and the company expects to open up a new field as soon as a troublesome water problem is overcome. The Oakridge is not the only concern to realize the possibility of a new field at Bandini, as practically all of the major companies operating in the State have secured acreage as close as possible to the well. Several companies have been paying a monthly rental on acreage nearby for over a year.

It would not be surprising, in view of several statements made by E. L. Doheny during the past year to see either Pan-American Western Petroleum Co. incorporated as a subsidiary of the Pan-American Petroleum Co., or the present company, enter the retail market in California within the near future. It has only been within the past year or so that the Pan-American Petroleum Co. has become a vital factor in the production of crude in southern California. Heretofore the company's operations have been centered in the San Joaquin Valley and since there is no possibility of the Pan-American securing control of the General Petroleum Co.'s pipe line over the Tehachapi Mountains, it is believed the former will, within a short time, begin laying a line from the Elk Hills district to its Watson refinery at Los Angeles Harbor. The Pan American has been selling its production in the Elk Hills field to the Standard Oil Co. for several years and this, together with the crude resulting from the proposed development of the Naval Reserves in this area, will give the company a substantial production.

C. C. Julian, who, during the past two years, has successfully promoted several syndicates and organized the $10,000,000 Julian Petroleum Corp., is losing very little time getting the company in active operation. During the past few months he has laid pipe lines from the Santa Fe Springs, Long Beach and Torrance Fields to the company's refinery near Torrance, which is expected to be completed and running crude by June 1, 1924. In the meantime the company is purchasing crude and storing it at several points for future use, or shipment east as desired. The company is drilling six to eight wells and, with the exception of the Standard Oil Co., is probably the largest individual buyer of crude in the Torrance Field. The company is completing approximately 35 service stations in the immediate vicinity of Los Angeles and it is expected that they will be selling gasoline and oil within the next two or three weeks. The company has made a contract with the General Petroleum Co. for a large amount of gasoline made according to specifications and the latter's deliveries are expected to be sufficient to meet the requirements of the Julian Petroleum Corp. until its refinery is in operation, some five or six months hence.

Growth of the Industry

The growth of the industry in California during the past two or three years has been enormous and the major companies are to be congratulated on the manner in which they have handled the situation. During this time the Shell Oil Co. has become a Statewide operator both as a producer of crude and a retailer of refined products. Its Martinez refinery in northern California has been running on southern California crude for a year or more and probably within the next few months its Watson refinery will be in full operation. During the same time the Associated Oil Co. and the Pan-American Petroleum Co. have entered southern California, both acquiring acreage and purchasing crude in the open market. Both companies have laid pipe lines from the principal producing fields to Los Angeles harbor, while the Pan American has also erected a refinery at Watson, only a few miles away. The latter has not entered the retail market yet but may do so during the coming year. The Associated Oil Co. has entered the retail market in Southern California and has several service stations in operation in Los Angeles selling Associated products.

Torrance

The week saw the completion of 11 wells with an aggregate initial output of 10,521 bbls. The Universal Consolidated Oil Co. had a banner week and carried off completion honors by bringing in three new wells with a total daily production of 3,646 barrels, although it was closely pressed for field honors by the U. S. Royalties with three completions and 2,150 bbls. of new production. All three of the Universal's completions were on its Moore lease and were finished at approximately the same depth, 3,775 feet. The company's largest new well was No. 5, brought in doing 1,500 bbls. a day of clean 24.6 gravity oil. Wells Nos. 2 and 3 were somewhat smaller, the former being credited with 1,146 bbls. of clean 24.3 gravity oil. On this same lease the Universal is drilling four additional wells, No. 4 at 3,450, No. 6 at 3,520 feet, No. 7 at 2,800 feet and No. 8 at 1,610 feet. The company is also drilling one well on the Jones lease which has reached a depth of 3,670 feet, and has erected rig for No. 2.

The U. S. Royalties Co.'s three new producers were No. 11, No. 15 and No. 18, all finished with 8¼-inch oil strings landed on bottom but completed at various depths. The company's most successful completion was No. 18, which was finished at 2,782 feet and put 1,200 bbls. of 26.5 gravity oil into the tanks during the first 24 hours. This new producer was followed a short time later by No. 11, finished at 3,735 feet, and No. 15, completed at 3,660 feet. The former, on a production test, was credited with 450 bbls. a day of clean 25.3 gravity oil, while the latter, No. 15, is listed as a 500-bbl. well, the oil being clean and testing 26.2 degrees. The completion of these three wells gives the company five producers with a total daily output of over 4,000 bbls.

W. P. Vurpillat, heretofore operating at Santa Fe Springs in conjunction with A. J. Ferdon, completed his first successful well at Torrance and was rewarded with a 1,750-bbl. producer. This new completion, finished with a 6¼-inch oil string landed on bottom, 3,765 feet, is Vurpillat's private undertaking. The output, which is flowing through a ⅝-inch bean under a pressure of 350 pounds, tests 25.3 degrees and shows a cut of 5 per cent sand. The presence of this sand is causing some little anxiety and, unless it is substantially reduced, the well will continue to be closely watched because of the tendency to sand up. The sand at present does not appear to be drilling mud, but because of the fact that the well is flowing quite steadily there is a possibility that the production will clean up in time.

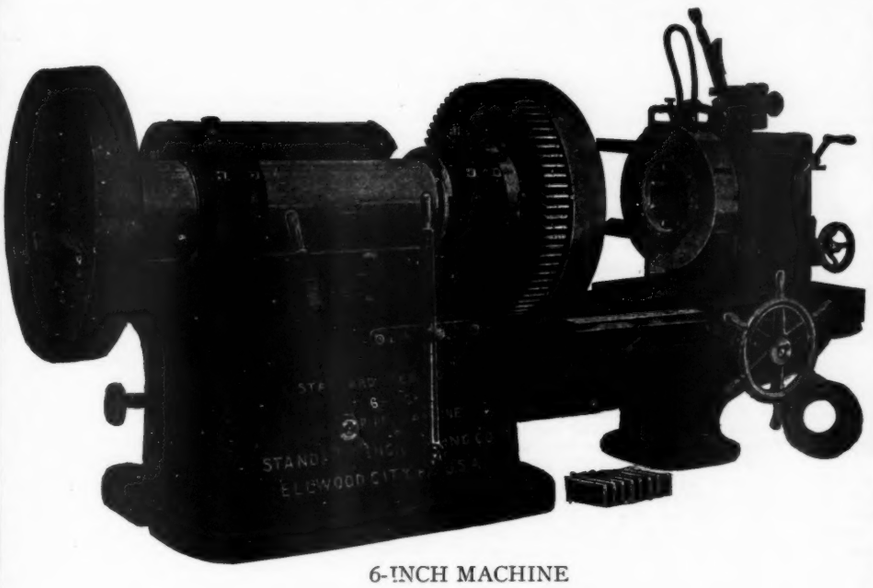
(Continued on Page 68)

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Following is a list of tankers, date departed, destination, kind of cargo and amount in barrels:

Cape Ann, December 17, New York, crude	71,584
John Worthington, December 17, New York, crude	91,690
Dixie Arrow, December 17, Providence, crude	78,812
Halsey, December 18, New York crude	71,429
Samuel Q. Brown, December 18, New York, crude	76,403
Huguenot, December 18, New York, crude	78,517
Muskogee, December 19, New York, crude	79,047
George H. Jones, December 19, New York, crude	76,038
Agwisun, December 20, New York, crude	77,907
George G. Henry, December 20, New Orleans, crude	71,362
Cape Cod, December 20, New York, crude	69,182
E. L. Doheny III, December 21, New Orleans, crude	94,109
Byron D. Benson, December 23, New York crude	87,623
Cerro Azul, December 23, New Orleans, crude	94,365
Acme, December 23, New York, crude	74,405
Coastwise	
R. J. Hanna, December 17, Richmond, crude	79,520
Alden Anderson, December 17, Avon, crude	70,350
Yorba, December 17, Martinez, crude	71,603
U. S. Tanker Neches, December 18, San Diego, fuel	49,047
S. C. T. Dodd, December 19, Richmond, crude	79,238
W. S. Miller, December 20, Richmond, crude	73,492
La Placentia, December 21, Port Moody, crude	30,193
Col. E. L. Drake, December 21, Portland refined	32,000
M. H. Whittier, December 21, Avon, crude	77,953
Los Angeles, December 22, Martinez, crude	76,740
Alden Anderson, December 23, Avon, crude	69,039
W. S. Miller, December 23, Richmond, crude	74,103
Exports	
Scopas (Dutch), December 10 England, gasoline	64,000
San Lorenzo (Br.), December 23, Chile, fuel	96,578
Zoppot (Danish), December 23, Chile, fuel	58,619
From San Francisco	
Atlas, December 17, Aberdeen, fuel	16,820
Lebec, December 18, Seattle, fuel	69,230
Los Alamos, December 19, Seattle refined	31,709
Anomia (Br.), December 19, Balboa, fuel	47,343
Charlie Watson, December 19, Aberdeen, refined	17,142
W. S. Porter, December 19, Portland, fuel	52,100
Tahchee (Br.), December 22, Shanghai, fuel	61,559
From Port San Luis	
Hoven, December 17, Honolulu, fuel	74,103
Montebello, December 22, Oleum, crude	74,791

STANDARD PIPE THREADING MACHINES



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3. May be equipped with quick acting chucks so the pipe can be gripped and released without stopping the machine.
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North Louisiana-Arkansas

By M. L. Vaughn

Humble Oil & Refining Co.'s No. 3 E. G. Murphy, Union County, Smackover, pumping 400 bbls.; Gulf Refining Co.'s No. 1 Clawson, swabs 200; Burch & Walker's No. 4 Lagrone, Ouachita County, flowing 200 bbls.; E. K. Hamilton's No. 1 Patton, pumping 200 bbls. R. O. Roy gets two 5-bbl. producers.

SHREVEPORT, La., Dec. 31.—Gains in daily average pipe line runs are shown in every area throughout the North Louisiana-South Arkansas territory with the exception of three, the Caddo, which shows slightly reduced production and the Elm Grove and Homer, which remained stationary. Inasmuch as the Smackover and Stephens areas are responsible for the greater proportion of the increase it is quite reasonable to infer that the increase in price offered for crude from these areas is the factor which has induced holders of stored oil to release it with the result that the aggregate increase throughout the entire field was 38,210 bbls. daily. The distribution was as follows:

North Louisiana	
Caddo, light	8,160
Caddo, heavy	2,185
De Soto-Red River	5,630
Elm Grove	1,070
Haynesville	22,260
Homer	9,135
Bellevue	5,830
Total	54,270
South Arkansas	
El Dorado	11,990
Calion	7,690
Smackover, light	27,805
Smackover, heavy	104,930
Stephens	5,575
Total	157,990
Total both areas	212,260
Total last week	174,050
Increase	38,210

Effective December 27, The Texas Co. posted a 15-cent raise on all grades of oil in the North Louisiana-South Arkansas territory. This did not apply to Homer, El Dorado and Haynesville crude for the reason that The Texas Co. does not handle production from those pools. The following day the Standard met The Texas Co.'s raise, applying the increase to all areas and grades and the Atlantic Oil Producing Co. followed suit by posting the same increase in their price on Stephens production, that company only handling crude from the Stephens area.

Webster Parish Test

Tests are being made of No. 1 Merritt, Section 14-21-10, drilled by the Gas Fields' Oil Co. in Webster Parish, about 3½ miles southeast of Cotton Valley, and 35 miles northeast of Shreveport. The Louisiana Oil Refining Corp. is contracted to take over the well, completed as a gasser with 45,000,000 feet of gas with a spray of oil, in case it should prove to be a commercial oil well. Reports from these tests are conflicting but when discounted from an average standpoint, present little evidence of the well having much potentiality as an oil producer. Fairly authentic reports are to the effect that opening up the well resulted in reducing the gas pressure from 1,000 to 400 pounds with some oil for from 15 to 30 minutes after which it reverted to a sprayer. This test was made through a 4-inch pipe and resulted in a mixture of oil, water (5 per cent) and sand (2 per cent). Further tests are to be made at short intervals to attempt to secure an oil flow by lowering the gas pressure.

Standardization of Pelmer & Davidson's No. 1 Frost Johnson was accomplished on December 26, and the well pumped for an hour and a half at the end of which time the rods parted. Reports as to the results obtained are conflicting but it is claimed the well made a head of 25 bbls. when it was opened up and that the pumping test, for the time it was made, gave indications of possibilities of a commercial producer.

Smackover Completions

Only three completions were recorded in the Union County area of the Smackover Field during the past week. Crawford & Sebastian brought in No. 5 James, Section 6-16-15, with an estimated production of 25,000,000 feet of dry gas, at 2,270 feet.

The Gulf Refining Co. completed No. 1 Clawson, swabbing 200 bbls. from 1.995 feet, in Section 14-16-15.

The Humble Oil & Refining Co. completed No. 3 E. G. Murphy, pumping 400 bbls. from 2,000 feet, in Section 15-16-15.

No New Operations

Notwithstanding the small number of completions the summary of drilling operations shows a loss in active work, not a single new operation being recorded.

The Arkansas Natural Gas Co. is drilling at 1,690 feet in No. 6 Cullens, Section 4-19-15. Bondurant and others are drilling in gumbo at 1,605 feet in No. 1 Tuberville, Section 9-18-12. The Constantin Oil & Refining Co. set 8¼-inch casing at 2,170 feet in No. S-3 Hinson, Section 7-18-15.

The Federal Petroleum Co. started drilling No. 3 W. H. Murphy, Section 22-16-15, set surface 10-inch and drilled to 225 feet, and in Section 28-17-12 is drilling in gumbo at 3,190 feet in No. 2 Union Saw Mill.

Ganzell and others are drilling at 1,700 feet in No. 1 McGraw, Section 7-16-16. Garrett and others are drilling in lime at 2,425 feet in No. 1 Robinson, Section 33-18-14. The Gulf Refining Co. is drilling at 1,440 feet in No. 1 Jameson, Section 21-16-15; has derrick up for No. 4 G. E. Murphy, Section 8-16-15; waiting on standard rig for No. 12 Lewis Werner, Section 5-16-16 and set 6-inch casing at 2,225 feet in No. A-1 Lewis Werner, Section 33-15-17.

The Higgins Oil & Refining Co. is drilling in gumbo at 1,205 feet in No. 3 James, Section 21-16-15. In the same section the Houston Oil Co. is rigging up to drill No. 1 Ballard, Section 21-16-15. The Humble Oil & Refining Co. is arranging to test 20 feet of sand at 1,990 feet in No. 4 E. G. Murphy, Section 14-16-15. The Humphries Oil Co. is rigging up to drill No. 1 Hays, Section 21-16-15.

The Natural Gas and Petroleum Co. is drilling in shale at 2,300 feet in No. 1 Murphy, Section 17-16-15. Noe and others have started drilling No. 2 Wells, Section 15-16-15, set 15½-inch casing and drilled to 450 feet.

The Lion Oil & Refining Co. has taken over the holdings of the Oil Operators Trust and has started drilling No. 2 Billyiu, Section 8-16-15, and is rigging up No. 4 in the same section; is rigging up No. 4 Graves, in Section 3-16-15, and No. 2 G. E. Murphy, Section 8-16-15.

Page and others are waiting on standard rig for No. 1 Holmes, Section 23-16-15, with the hole standing full of fluid, 25 per cent salt water with 61 feet of sand, at 2,010 feet The Pure Oil Co. is drilling in gumbo at 1,855 feet in No. 3 Craig, Section 15-16-15.

The Quaker City Petroleum Co. set 8¼-inch casing at 2,100 feet in No. 1 Sloan, Section 14-17-15.

Sam Richardson and others are drilling plug in No. 2 E. G. Murphy, Section 23-16-15, at 1,860 feet. The Roxana Petroleum Corp. is drilling in the pay at 1,994 feet with top of sand at 1,982 feet in No. 4 Wells, Section 15-16-15. The Standard of Louisiana has started drilling No. 2 Lingelback, Section 22-16-15, and set 10-inch surface casing at 185 feet; in Section 5-16-16, tested dry at 2,375 feet in No. B-3 Saxon and will go deeper. The Sun Oil Co. set 4½-inch casing at 1,985 feet in No. 4 Hays, Section 3-16-15.

The Texas Co. set 8-inch casing at 1,923 feet in No. 2 Cook, Section 21-16-15; tested salt water at 2,083 feet and is arranging to set 4½-inch at 6-inch seat which is leaking.

Willroy and others are drilling at 1,500 feet in No. 1 Goodwin, Section 23-16-15. Woodley and others set 6-inch casing at 2,700 feet in No. 2 Townsend, Section 6-18-14.

Ouachita County Completions

Eleven producers were completed in this field last week, most of them pumping wells. Burch-Walker brought in No. 4 Lagrone, Section 25-15-17 flowing 200 bbls. through 2½-inch tubing at 2,300 feet. The Forest Oil Co. put No. 4 Hardin on the beam, Section 28-15-16, with 80 bbls. production at 2,245 feet. The Gulf Refining Co. put No. 2 Solmson on the beam with 125 bbls. production at 2,295 feet, Section 29-15-16.

E. K. Hamilton made a 200-bbl. pumper of No. 1 Patton at 2,260 feet, Section 31-15-16. The Invaders Oil Co.'s No. 3 Hardin is pumping 80 bbls. at 2,298 feet, Section 28-15-16. In Section 29-15-16, Johnson and associates completed No. 1 McElroy, flowing 170 bbls., 15 per cent salt water, at 2,285 feet.

Keen & Woolf brought in No. 3 Myer Estate, Section 32-15-16, flowing 160 bbls. through 2½-inch tubing at 2,250 feet. Klotz and Thomas completed No. 1 Peace, Section 26-15-17, flowing 150 bbls. through 2½-inch tubing at 2,332 feet.

The Magnolia Petroleum Co. completed No. 2 Patton, Section 32-15-16, flowing 125 bbls. at 2,253 feet. The Smith Refining Co. brought in No. 4 Fee, Section 30-15-16, flowing 170 bbls. through 2½-inch tubing, 6 per cent salt water, at 2,270 feet. The V. K. F. Drilling Co. made a 70-bbl. pumper of No. 2 Patton at 2,300 feet, Section 32-15-16.

Drilling Operations

A summary of operations last week shows 4 wells waiting on standard rig, 10 temporarily abandoned, 51 drilling, 4 rigging up, 24 derricks and 2 locations. The American Trust Co. abandoned derrick for No. 1 Smith, Section 30-15-17.

Burton Trustee set 10-inch casing and drilled to 700 feet in No. 6 Hughes, Section 28-15-16. The El Dorado Union Oil Co. is fishing 6-inch casing at 1,845 feet in No. 3 Shirey, Section 30-15-16. Giles and others are down 1,200 feet in No. 3 Watts, Section 30-15-16. The Gulf Refining Co. is arranging to set tubing and packer in No. 2 Patton at 2,250 feet with 2,000 feet of oil in the hole, Section 32-15-16.

The Humble Oil & Refining Co. is rigging up No. 1 Ferris, Section 34-15-15. Hunt and others set 10-inch casing and drilled to 100 feet in No. 3 Solmson, Section 30-15-16. Lanier and others set 10-inch casing and drilled to 350 feet in No. 2 Shirey, Section 30-15-16. Lewis and Clark are down 1,310 feet in No. 4 Berry, Section 24-15-17.

The Magnolia Petroleum Co. has derrick up for No. 4 Smith, Section 31-15-16. The Majestic Smackover Oil Co. is down 1,320 feet in No. 2 McElroy, Section 29-15-16. Newton and others set 10-inch casing and drilled to 700 feet in No. 2 Cunningham, Section 25-15-16.

The Penguin Oil Co. is down 1,840 feet in No. 2 Hardin, Section 27-15-16. The Phillips Petroleum Co. has derrick up for No. 3 Hearnsberger, Section 32-15-15. The Roxana Petroleum Corp. is down 2,250 feet in No. 1 Laney, Section 31-15-15.

The Simms Oil Co. is swabbing to test No. 6 Hildebrand, Section 29-15-15, at 2,035 feet. It is drilling at 2,250 feet in No. 1 Reynolds, Section 32-15-16. The Smith Refining Co. has derrick up for No. 5 Fee, Section 30-15-16; drilling at 1,875 feet in No. 3 Patton and has 6-inch casing set at 1,855 feet in No. 5, Section 31-15-16.

Solmson and others set 6-inch casing at 1,855 feet in No. 2 Fee, Section 30-15-16. The Standard Oil Co.'s No. 3 Solmson is estimated making 2,000,000 feet of gas at 2,267 feet. Oil came up 200 feet in 12 hours. It can bail dry and is arranging to pull liner and drill deeper, Section 29-15-16. The Sure Oil Co. is down 1,940 feet in No. 2 Fee and set 10-inch casing at 80 feet in No. 3, Section 30-15-16.

The Texas Co. is down 2,030 feet in No. 1 Chandler and is down 1,277 feet in No. 2, Section 30-15-16; drilling at 1,030 feet in No. A-3 Solmson, Section 29-15-16 and set 6¼-inch casing at 2,135 feet in No. B-1 Solmson, Section 32-15-16. The V. K. F. Drilling Co. has 6-inch casing set at 2,173 feet in No. 3 Patton and is rigging up No. 4, Section 32-15-16. Whittaker and others set 10-inch casing and drilled to 800 feet in No. 2 Berg, Section 29-15-16.

Wingfield and others set 6-inch casing at 2,200 feet in No. 1 Fincher, Section 32-15-16. The Woodley Petroleum Co. shut down No. 2 Patton account high water at 1,425 feet, Section 32-15-16.

Stephens Field

Ouachita County: The Atlantic Oil Producing Co. is drilling at 890 feet in No. 4 John Webfer, Section 30-15-19.

Columbia County

The Magnolia Petroleum Co. completed No. 4 Hammond, pumping 30 bbls. at 2,097 feet, Section 25-15-20.

Hickman and others are drilling at 1,900 feet in No. 2 Smart, Section 13-15-20. Pete Hoffman set 6-inch casing at 1,970 feet in No. 2 Buffington, Section 24-15-20.

Nevada County

The Transcontinental Oil Co. is drilling at 2,380 feet in No. 1 Blakely, Section 14-13-20.

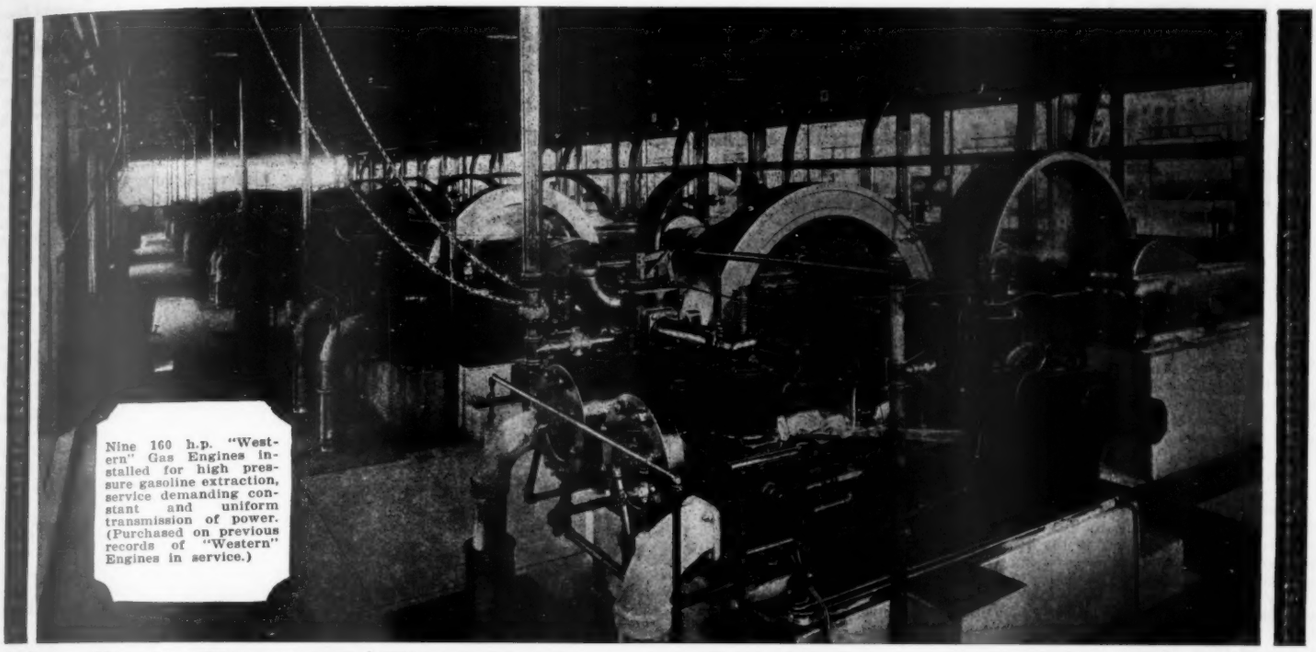
Bellevue-Bossier

Two good wells were completed in the shallow sand district in Bossier Parish by R. O. Roy in Section 15-19-11. No. 25 Scandland made a 50-bbl. pumper at 365 feet and No. 27 pumped 50 bbls. at 351 feet. No. 26 is completed and will be put to pumping at 369 feet.

The Standard Oil Co. has set 6-inch casing at 369 feet in No. 4 Bliss & Weatherbee, Section 10-19-11.

Caddo Parish: In the Pine Island district, the Dixie Oil Co. set 6-inch casing at 1,465 feet in No. 57 Robertshaw, Section 14-21-15; the Fortuna Oil Co. is drilling at 350 feet in No. 12 Herndon, Section 22-21-15, and the Muslow

(Continued on Page 58)



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Fields of the Central West

By Whit

Old Lima Field's best producer 60-bbl. well in Wood County, Ohio, territory overlooked in early days. Trenton Rock Oil Co. gets 90 bbls. flush in Clark County, Illinois. McCombs Bros. Drilling Co. finds 40-bbl. well in Owsley County, Kentucky. Pulling out many wells to use material in new campaign.

FINDLAY, Ohio, Dec. 31.—The closing month of the year brought about the pulling of many wells that have been pumping for years, but not worth the expense of further working, and the material will be utilized for further work over the fields, which indicates the companies are getting in shape for an active drilling campaign. Most of the material taken from the old pumpers is in excellent shape and means a big saving to the operating companies in their new work. In the pulling of old wells the Ohio Oil Co. leads by a huge majority. The only three fields where a record of abandoned wells is kept are the Lima Field of northwestern Ohio, Indiana and Illinois.

Probably the most important well reported for the week in the old Lima Field was the No. 4 on the Fred Schulte farm, in Section 35, Lake Township, Wood County, and between Toledo and Woodville, and in territory that was overlooked in the early days of the development. This well was drilled by Lants, Gregg, Schulte and others, and shows for 60 bbls. at a depth of 1,290 feet. This well is located 200 feet from the south line and 1,000 feet from the east line of the farm, and shows conclusively that there is still a large amount of undrilled territory in the extreme eastern part of Wood County as well as the western part of Ottawa County and the southern portion of Lucas County.

In the same county, in Perrysburg Township, Davis & Carroll drilled a test on the northeast corner of the William Grolle farm, Section 33, which produced 20 bbls. from a depth of 1,250 feet. In Section 28, Plain Township, same county and out from Bowling Green, the Allen Oil Co.'s No. 3 Roe heirs, mapped as the D. Hartman farm, pumped 20 bbls. from a depth of 1,328 feet. The only other well reported for the week from the field was John Weber's No. 7 on the William Sandrock, Section 4, Allen Township, Ottawa County, for 6 bbls. at 1,367 feet.

In the heart of the once famous Wood County Field, the Ohio Oil Co. has piled up a vast amount of good junk from a large number of wells pulled out and will have enough material to drill at least a few hundred wells at little cost. In Liberty Township, of this county the Ohio company abandoned the following wells: No. 24 P. F. Donzy, Section 24; Nos. 1, 5, 8, 10, 16, 17 John Walbolt, Section 26; Nos. 1, 3 and 8 H. McIntyre, Section 26; No. 11 R. Sommers, Section 23; No. 22 C. Bay, Section 35; Nos. 34, 49 Charles Mercer, Section 14; Nos. 1, 3, 10, 23 G. F. Munn, Section 16; Nos. 1, 4, 9 A. M. Lashaway, Section 11; No. 5. T. W. Knight, Section 12; Nos. 1 and 12 Mercer-Carlin, Section 12; No. 61 D. J. Corey, Section 15; No. 2 J. E. Digby, Section 15; Nos. 2, 4 and 5 M. Schondelmyer, Sections 13 and 6; No. 28 Ban Mercer, Section 13; Nos. 11, 16, 21, 26, 47, 53 R. E. Mooney, Section 20; No. 47 H. Santamyer, Section 35; No. 14 A. E. Lashaway, Section 23; No. 2 Carlo Call, Section 22; No. 4 J. J. Alspaugh, Section 20; Nos. 1, 2, 3, 4 H. W. O'Dell, Section 4; Nos. 8, 12, 13 John Johnson, Section 11, No. 3 J. E. Parmenter, Section 2; Nos. 2, 7 Royal B. Mercer, Section 12; Nos. 1, 3, 7, 8, 16, 17, 19, 24 J. W. Powell, Section 3; No. 10 Eli Stockwell, Section 1 and Nos. 2, 4, 5 and 6 H. Bloom, Section 19. In Portage Township, this same company pulled out No. 5 J. M. Beard, Section 7. In Henry Township, the same was done with No. 21 W. A. Jones, Section 1; No. 12 Peter Fryman, Section 2; Nos. 23 and 29, John Dahn, Section 2; Nos. 4, 5, 7, 11 and 13 Dave Fulton, Section 14. It was on this last named farm, that the first real oil producer was drilled in Wood County in the middle '80's, which shows the long lived production of the Trenton formation. In Bloom Township, this company also abandoned No. 20 Skidmore-Thacher, Section 20; No. 7 Elias Simon, Section 32; No. 6 L. D. Simon, Section 31; Nos. 2 and 4 J. G. Webb, Section 26; No. 18 S. Hammon, Section 19, and No. 19 S. Fries, Section 24. This company also abandoned the past few weeks a total of 52 old wells in Hancock County; 16 in Auglaize County; 7 in Van Wert County and 4 in Sandusky County, to say nothing of the many wells pulled out by operators during December.

Central Ohio

Advice from Salesville, a small hamlet in the southeastern part of Guernsey County on the Baltimore & Ohio railroad, about 38 miles west of Wheeling, is that a local company there known as the Oxford Mills Oil & Gas Co., has been developing some natural gas in a quiet way. This company has been drilling on the Carl House 80 acres and reports five wells completed, two of which they estimate at 1,000,000 feet and three that are smaller gas producers. The report is that there is still some acreage not covered by lease, but it is known that the Ohio Fuel Gas Co. holds quite an acreage in that vicinity. It looks very much as if the entire eastern portion of Ohio will develop either oil or gas at most any point. Almost the entire east half of Ohio is in for a thorough testing and at the same time the west half will be heard from.

A number of new locations and new wells started drilling are reported from the Central Ohio area. In Hanover Township, Ashland County, the East Ohio Gas Co. is drilling No. 1 on the William Parrott 80 acres, Section 23, as well as No. 1 on the G. Hans 80 acres, Section 27. The Logan Gas Co. has started the drill at its wildcat well on the John F. Henry 182 acres, Section 27, Ruggles Township, same county. In Mohican Township, same county, the Hawk Gas Co. is drilling No. 1 on the J. H. Slater 60 acres, Section 10.

In Litchfield Township, Medina County, J. F. Hogan and others are starting No. 4 on the W. Anderson, Lot 1. In York Township, the Ohio Fuel Gas Co. is drilling No. 5 George Ackers 80 acres, Section 3. The Central Ohio Gas Co. has spudded in No. 1 on the Caroline Biddle 114 acres, Section 5. Daugherty Bros. are drilling No. 1 John Kremer 9 acres, and Hulse & Koontz have started No. 3 P. J. Thompson, Section 3. The Logan Gas Co., located No. 1 on the G. L. Morelock 102 acres, Section 7, and No. 1 on the C. J. Pierce 35 acres, Section 13.

In Grafton Township, Lorain County, the Ohio Fuel Gas Co. is drilling No. 1 William Stock 83 acres, Section 12, and the East Ohio Gas Co. made locations for No. 2 Henry Barth 82 acres, Lot 68, and No. 4 E. F. Shaffer 118 acres, Lot 67.

In Wooster Township, Wayne County, the Klise-Ecketein-McCann Co. is drilling No. 2 J. McSweeney 94 acres, Section 5. In Milton Township, the East Ohio Gas Co. is drilling No. 1 J. Schrack 92 acres, Section 32. In Wane Township, the Pittsburgh-Wooster Oil Co. is drilling No. 3 Imgard Bros. 39 acres, Section 16, and Burton, Morgan and Stephens are drilling No. 2 Brady Carmony, Section 9. The Logan Gas Co. is starting No. 1 on the S. A. Showalter 60 acres, Section 5. In Chippewa Township, the East Ohio Gas Co. is drilling No. 1 A. E. Stepfield 33 acres, Section 17. In Cannan Township, Daugherty & Co. is drilling No. 1 Simons 163 acres, Section 24. The Logan Gas Co. is drilling No. 1 Harley G. Russell 56 acres, Section 21, and the Central Ohio Gas Co. made a location for No. 2 H. E. Geyer 33 acres, Section 2.

In Monroe Township, Holmes County, the spot where some of the best gas wells are being found in the field, development work is getting quite active. The East Ohio Gas Co. has started the drill at No. 2 Milton J. Lowe 29 acres, Section 16. The Central Ohio Gas Co. is drilling No. 1 Elva R. Martin 57 acres, Section 4, and No. 1 on the Ida A. Bower 40 acres, Section 16, and made a location for No. 2, same farm. The Ohio Fuel Gas Co. is nearing the pay sand at No. 1 Oscar Korne, Section 12.

In Franklin Township, Jackson County, the Ohio Fuel Supply Co. has started the drill at No. 1 Clarissa Scurlock 55 acres, Section 2, and No. 1 Minnie Stephenson 160 acres, Section 12, and started drilling No. 1 Jeff Buckley, Section 26, Lick Township.

Illinois Field

All sections of the Illinois Field show less development than at any time during the year just closing. In Martinsville Township, Clark County, the Trenton Rock Oil Co.'s No. 2 on the William Carper, Section 30, showed 90 bbls. flush from the stray sand at 1,403 feet. In Johnson Township, Dinsmoor and others' No. 1 on the Lewis Hedges, Section 12, pumped but 1 bbl. from the 536-foot pay sand. In Martinsville Township, the Ohio Oil Co. is drilling No. 11 S. N. Brossman farm, Section 30.

In Sandoval Township, Marion County, the Southwestern Oil & Gas Co. abandoned No. 6 B. C. Warfield, Section 5; No. 7 L. Stein, same section, and No. 10 A. B. Benoits, Section 8.

In Wabash Township, Wabash County, there are three rigs up and one well drilling. In Friendsville Township, same county, Charles Foreman and others' test on the Charles Schrader, Section 12, proved a dry hole at 1,830 feet. In Mt. Carmel Township, about 7 miles or so to the northwest of Mt. Carmel, George Porter and others drilled in their wildcat well on the southwest corner of the F. S. Veihman farm, Section 2, which was dry at a depth of 1,899 feet.

In Petty Township, Lawrence County, the Ohio Oil Co. abandoned No. 2 George W. Gray No. 2 farm, Section 12; No. 2 H. A. Hardacre, same section, and No. 2 George B. Cessna, Section 11. The Central Refining Co. pulled out Nos. 1 and 2 on the James Waggoner, Section 26.

Word comes from Oakland City, in Monroe Township, Pike County, southwestern Indiana, that Oscar Nelson has drilled in a dry hole in a test on the northwest corner of the Walter Lindsay farm, Section 22, at a depth of 1,180 feet. In Madison Township, same county, the Ohio Oil Co. abandoned the following wells: No. 2 W. H. Robling, Section 1; No. 8 M. F. Snyder, Section 2; No. 2 J. P. Gladish, Section 30; No. 5 John A. Sutton, Section 30; Nos. 8 and 2 W. H. Gladish, Section 6; Nos. 5 and 6 A. Willis, Section 6; No. 4 John T. Rumble, Section 1, and No. 4 Laura C. Stewart, Section 30. In Barton Township, same county, J. H. Young and others are making ready to start a wildcat well on the Thomas Alcorn, Section 6.

In Center Township, Gibson County, the Murphy Oil Co. is drilling No. 4 E. Whiting, Section 31, and Perry Tidenour and others have rigs in for No. 5 M. Hollingsworth, Section 24 and No. 4 W. C. Reeves, same section. In Patoka Township, the Ohio Oil Co. abandoned No. 2 Munford heirs, Section 2, and in Patoka Township, Pike County, did the same with No. 10 Harlan L. Keys, Section 14.

Eastern Kentucky Field

Completions were few and far between in the eastern Kentucky fields during the holiday week, as most of the oil country contractors and drillers were taking things easy, with expectations of starting more active drilling with settled weather. The Union Gas & Oil Co., R. G. Gillespie and others, operating concerns, expect a big year in the Weir sand fields.

In Owsley County, a good well was reported for the week. This is the McCombs Bros. Drilling Co.'s No. 2 Fred Evans farm, reported at 40 bbls. Johnson and others No. 1 Spencer Flannery farm, same field, is reported at 15 bbls. This field will be more thoroughly explored with the opening of spring.

In Wayne County, in the Hiddup section, J. R. Johnson and others' test on the Tom Simpson, is good for about 1 bbl.

In the South Weir Field, Johnson-Magoffin County, the Atlantic Oil Producing Co.'s No. 3 on the Henry Cantrell west 40 acres, is reported at 5 bbls. No new completions were reported from the North Weir Field.

The Cumberland Pipe Line Co. reports for the week the handling of a total of 87,929.09 bbls. though its gathering lines in the Eastern Kentucky Field, for a daily average of 14,654.85 bbls. The average runs vary but little from week to week, showing that the production is holding up to expectations, especially in the Weir sand area.

DOUBT ROAD'S RIGHT TO RIGHT-OF-WAY OIL

Attorneys for the Kansas City, Mexico & Orient Railroad, in Texas and Kansas, differ in their opinions as to the legal right of the road to the minerals and oils under the surface of the ground along the Orient's right-of-way in Texas.

The attorney in Texas has expressed the opinion that the road does not have a legal right to the oil and minerals under the surface of the right-of-way, H. H. Shaufler, general manager, said. The attorney in Kansas is inclined to believe the railroad has a legal right to the minerals and oils.

This question was taken up by the legal department when the well near the right-of-way in Reagan County, Texas, was brought in. The land on which the Orient's line runs is a part of the State University land grant.

GODFREY WITH COOPER GAS ENGINES
establishes new non-stop run of 262 days

W. J. Godfrey, station engineer in charge of eight Cooper 485 H. P. Gas Engines, in the Branchland Station of Columbia Gas and Electric Co., Branchland, W. Va., has succeeded in establishing a new non-stop station record for large gas engines. The following is a brief summary of his accomplishment:

All eight engines were started on Sept. 14, 1922.

Eng. No.	Days Continuous Run	Reason for Shutdown
1	222	General Adjustment
2	236	General Adjustment
3	205	Compressor Crosshead
4	103	Compressor Crosshead
5	262	Pipe Line Repair
6	245	Water Leak
7	262	Pipe Line Repair
8	242	Water Leak

The two oldest engines have been operating for nine years in this station where the gas demand is constant both summer and winter. No attempt was made to punish the engines in order to establish a record. It can be seen from the report that when the smallest adjustment was necessary, the engine was stopped and the adjustment made. A complete report showing lubricating oil individual cylinder wear, which averaged two thousandths of an inch for the year, and the complete list of replace parts for the year is available for those who wish it.

Too much honor cannot be given to the man, W. J. Godfrey, whose unceasing energy in watching the small details about his station has made such a record possible. Yet he says, "No engine but a Cooper could last on a job like ours."

THE C. & G. COOPER CO.

1605 Kirby Bldg., Dallas **Mt. Vernon, Ohio** *504 Kennedy Bldg., Tulsa*

Gulf Coast Oil Operations

By P. L. McGreal

Only nine completions in Coastal pools with 550 bbls. new production. Some companies drawing on stocks. Gulf Production Co.'s No. 10 Phoenix, Hull Pool, pumping 200 bbls. United North & South Co.'s No. 8 Rios, Luling, flowing 500 bbls. Webb County test affects 100,000 acres of leases.

HOUSTON, Tex., Dec. 31.—Only nine wells were completed in the Gulf Coast pools during the week with 550 bbls. new production developed. Four of the total are either salt water holes or dry. Three wells were completed in the Luling light gravity field with 550 bbls. new production. Two of the three were abandoned. Completions in the Laredo districts number 2 wth 135 bbls. new output.

Incessant rains continue to hamper operations and in the Orange Pool. Practically every rig is under water caused by an overflow from Cow Bayou which flows through the district. The electric pumping powers are out of commission and the daily average production for the week in that district is off from last week's estimate. Even down on the border in the semi-arid region the rains resulted in a partial suspension of the work in the Laredo districts.

Credit balance quotations were advanced 25 cents on Thursday by The Texas Co. and the Humble Oil & Refining Co. and the other lines are expected to follow with a similar announcement. Both companies posted $1.25 for grade "A" in all pools, except Pierce Junction, Blue Ridge and some production in the Hull Pool for which the Humble Co. posted $1. This oil is classed as grade "B". While the rapidly declining production presaged an advance it was not expected before some time in January.

Drawing on Stocks

The daily average output has fallen off very rapidly during the past 30 days and some of the companies are drawing on stocks to fill orders. Stocks of Gulf Coast crude in steel and earthen storage were estimated at 17,495,633 bbls. on December 15, a decline of 586,250 bbls. for a 30-day period.

Of the gross daily average production from day to day some 18,000 bbls. is listed as grade "B" which is either light gravity and unfit for lubricating stocks or contains such a percentage of sulphur and emulsion as to be fitted for nothing but fuel. Some authorities estimate the daily refinery requirements at 85,000 bbls. of coastal crude which is a trifle more than the daily output of grade "A". In view of these conditions operators anticipate the market will advance to $1 50 per barrel early in the new year. The Texas Co. is running into storage at West Columbia, where it has approximately 10,250 barrels of the estimated daily average for the pool. The company has been running an average of 7,500 bbls. per day from the pool and putting the balance into storage. The Humble Oil & Refining Co. is now getting the bulk of its coastal crude from the Hull Pool, running the production of the Republic Production Co. there to its Baytown refinery. The company's production in the Orange Pool has declined rapidly due to salt water encroaching. The Gulf Co. gets the larger part of its needs from the Hull and Orange Pools.

Estimated Daily Average

The estimated daily average gross production in the Coastal Pools, the light gravity Laredo and Milam County districts and miscellaneous, is placed at 86,790 bbls. for the week, compared with an estimate of 91,835 bbls. last week. The greatest decrease is in the Orange Pool for reasons explained. The gross for the Coastal pools alone is placed at 80,530 bbls. against an estimate of 85,435 bbls. last week. The Luling Field is placed at 8,000 bbls. and the Callihan section in McMullen County at 2,000 bbls. The two latter are not included in the totals. The estimate for each district is as follows:

District—	Bbls.
Batson	1,125
Blue Ridge	600
Barber Hill	315
Dayton	60
Damon Mound	1,850
Edgerly (La.)	340
Goose Creek	12,700
Humble	5,435
Hull	17,400
Jennings (La.)	710
Markham	90
Orange	12,750
Pierce Junction	825
Spindletop	840
Saratoga	1,720
Sour Lake	4,725
Somerset	2,675
Vinton (La.)	5,675
Welsh and Anse La Bute (La.)	70
West Columbia	13,300
Miscellaneous	3,585
Total	86,790

The Orange Petroleum Co. worked over No. 4 Chesson into a 100-bbl. pumper at 3,820 feet. At Gum Island, the Orange Production Co.'s No. 1 is at 1,515 feet with 17 feet of sand reported. It will be tested.

Operations in the Pools

In the Hull Pool, the Link Oil Co.'s No. 4 Rivere is pumping 60 bbls. at 3,475 feet. The Gulf Production Co.'s No. 10 Phoenix, a work over, is pumping 200 bbls. at 2,530 feet. It is on the southeast side. That company is deepening No. 9 Phoenix and rigging No. 36 Phoenix. On the northwest side of the dome, its No. 5 Harrison is drilling below 3,200 feet. The Monarch Oil & Refining Co.'s No. 2 Miller is below 3,565 feet and No. 3 around 4,100 feet. The Houston Production Co.'s No. 7 Taylor is at 1,875 feet. The Humble Oil & Refining Co.'s No. 1 Sterling is around 1,435 feet and No. 2 Taylor below 1,876 feet. The Mecom Oil Co. is trying to shut off salt water in No. 3 Mecom at 3,800 feet. The Empire Gas & Fuel Co.'s No. 3 Lynd is starting.

On the east side of the hill, the Republic Production Co.'s Nos. 26 and 43 Dolbear are working over. A derrick is standing for No. 74 Dolbear. No. 75 is drilling at 655 feet and No. 75 is below 1,235 feet.

In the Goose Creek Pool, the Humble Oil & Refining Co.'s No. 26 Peninsula is going on the pump at 4,515 feet. Its No. 24 Peninsula is idle. No. 53 Smith is drilling at 2,675 feet and No. 10 Tabb is below 4,000 feet. The Gulf Production Co.'s tests on the Chapman-Bryan, Hirsch and Beaumont leases are shut down temporarily. They are drilling in shallow water in the bay. Newton and Gilcrest's No. 4 Gillette is sidetracking at 1,765 feet. The Gulf Coast and Crown Oil Co.'s joint No. 31 Galliard is drilling at 2,624 feet.

In the West Columbia Pool, The Texas Co.'s No. 53 Hogg bailed salt water at 3,700 feet, as did the Humble Oil & Refining Co.'s No. 1 Smith at 3,325 feet. Both are worked over holes and both will be drilled deeper. The Arax Oil Co.'s No. 2 Williamson is resetting strainer at 2,730 feet.

At Damon Mound, the Sinclair Oil & Gas Co. is drilling No. 8 Becker and H. R. Cullen No. 3 on the Ward on the southeast side of the dome. It is below 3 350 feet.

On the west side of the Blue Ridge Dome, The Texas Co.'s No. 11 Robinson is drilling below 2,765 feet and the Mutual Oil Co.'s No. 1 Weems around 3,345 feet.

Hardin County Pools

The Deutser Oil Co.'s No. 1 Hooks in the Batson Pool is below 350 feet. The Texas Co.'s No. 268 Fee in the Sour Lake Pool is at 1,900 feet. In the Saratoga Pool, Paggi Bros. Oil Co.'s No. 3 Louis is at 1,455 feet with 6⅝-inch casing set. The Rio Bravo Oil Co.'s No. 83-B is around 1,600 feet.

Other Pools

The Coastal Oil Fields Co. is preparing to resume work on the Japhet lease at Barber Hill in Chambers County. The Houston Oil Co.'s No. 1 Adams, a formation test in that county, near Wallisville, is around 1,560 feet.

In the Markham Pool, the Rycade Oil Co.'s No. 1 Myers, No. 2 Hudson and No. 1 Schulte are idle for the present on account of high water. The same company's No. 2 McFadden, off the dome at Spindletop, is also shut down temporarily below 4,100 feet.

The Gulf Production Co. and Snowden and McSweeney's joint No. 8 Davis, at Big Creek, a semi-pool in Fort Bend County, 7 miles south of Richmond, was abandoned at 590 feet and same interests have started No. 9 Davis. The Great Western Oil Co. deepened No. 1 Carter at High Island, another semi-pool, and increased its output from 5 to 10 bbls. at 170 feet. The Sun Oil Co.'s and Yount-Lee Oil Co.'s tests there are shut down.

South Louisiana

In the Vinton Pool, The Texas Co.'s No. 23 Gray is pumping 90 bbls. at 2,175 feet and Marrs McLean's No. 5 Gray bailed dry at 3,475 feet. The Vinton Petroleum Co.'s No. 11 Harmony is sidetracking at 975 feet and No. 12 Harmony is drilling below 2,145 feet. The Sun Oil Co. has a derrick up for No. 2 Johnson. The Edgerly Petroleum Co.'s No. 1 Tillery is drilling at 3,600 feet. The Just Oil & Refining Co.'s No. 2 Lyons is fishing at 1,800 feet. The following drilling wells are shut down owing to flood conditions: Gulf Refining Co.'s No. 30 Star and No. 23 Vincent, Siess Oil Co.'s No. 8 Green, Edgerly Petroleum Co.'s No. 1 and No. 2 Vincent and Gulf Coast Oil Co.'s No. 7 Rescue. No wells are drilling in either the Jennings or the Edgerly Pools.

The floods have also interfered with wildcat tests in the Coastal counties and they are standing idle waiting until conditions improve and material can be hauled to the locations.

Luling Field

The United North and South Oil Co.'s No. 8 Rios in the old part of the Luling Field in Caldwell County, is flowing 500 bbls. of clean oil, completed early in the week. M. O. Rayor has started No. 2 Waller to try for a sand at 900 feet. The M. K. Towns Production Co.'s No. 4 and No. 5 Merriweather are drilling. The deepest test in the field is the Grayburg Oil Co.'s No. 1 Blackwell, drilling in the Trinity formation at 3,300 feet. The United North and South Oil Co.'s No. 1 Stair is rigging as an offset to the Jarmon Oil Co.'s No. 1 Moore.

Across the San Marcos River to the southwest over in Guadalupe County, the United North and South Oil Co. set 6⅝-inch casing in No. 1 Lopez at 2,170 feet. It is showing some oil and gas and if a well is developed it will extend the field 1 mile to the southwest. Same company abandoned No. 1 Manford in Guadalupe County around 3,500 feet. The Dixie Oil Co. is rigging No. 1 Koppe, north of Lavernia, near the junction of Guadalupe, Bexar and Wilson counties.

In Bexar County, the Transcontinental Oil Co. is rigging for a deep test north of the Cibalo River. It has drilled three shallow tests in that region. McClanahan and others are rigging No. 1 north of the river in Wilson County.

Laredo Districts

The Magnolia etroleum Co.'s No. 10 in the light gravity section of the Laredo region is pumping 60 bbls. at 1,940 feet. The Schott Oil Co.'s No. 20 Garcia is a 75-bbl. well at 1,720 feet. The Shaan Oil Co. is drilling No. 3, Allsworth Bros. No. 2 Fee and Nueva Oil Co. No. 2 in the old districts. Chandler and Grant are drilling No. 1 on the escarpment. Interest in the Webb County tests now centers on Morgan and Gibble's No. 1, located north of the Barnsley ranch on which the Caroline-Texas Oil Co. has found gassers. Eight and one-quarter casing is being set by Morgan and Gibble at 1,970 feet. It shows some gas. The development of either oil or gas in this test will prevent leases on over 100,000 acres from lapsing.

A late report from Luling states the Grayburg Oil Co. of San Antonio, has taken over the holdings of the Seals Creek Oil Co. operating on the Proctor lease in the old part of the field. The consideration is said to be $65,000. The Grayburg Co. will drill four wells on the Proctor. That company now has production on the Merriweather and Clara Byrd leases, a pipe line to Oiltown on the Aransas Pass and San Antonio Railroad, 4 miles from the field, a loading rack and tank cars in which the crude is shipped to its refinery in San Antonio. Hughes and Buchanan have finished the contract depth for No. 1 Purcell, east of the Luling development and shut down. At one time it was touted as a possible extension of the field.

Medina County

The Ina Oil Co. has a location for No. 3 Durst in Medina County. Its No. 1 Durst is rated as a 25-bbl. well and No. 2 at 50 bbls. Wolfe and others are setting packer to try and shut off the water in No. 1 below 900 feet. A location for a test has been made 4 miles west of the Wolfe test. The B. J. K. Oil Co. is also trying to plug off the water in No. 1 Adams at 1,100 feet. Fritz Fuchs and others are starting No. 1 Weimers, 3½ miles south of the Ina Co. wells. The McBride Drilling Co.'s No. 1 is shut down at 1,300 feet. Ott and others are setting casing in No. 1 Durst to test a sand showing oil around 1,500 feet. Donaldson & Smith's No. 1 Wilson ranch is shut down at 780 feet. O'Bryan and others' No. 1 Noxon ranch is drilling below 435 feet. Sherman & Haught No. 1 is waiting on casing at 600 feet. The California-Medina Association's No. 1 is drilling below 2,200 feet. It is in survey 1,012. Metzgar and others have a derrick up for No. 1 Ward and the Middle States Oil Co. a location for No. 1 Faseler. The Williams Oil Co.'s No. 1 Moebius is drilling with cable tools at 315 feet, 2½ miles north of the Ina Co.'s wells.

The Porter Oil Co. has a location for

(Continued on Page 86)

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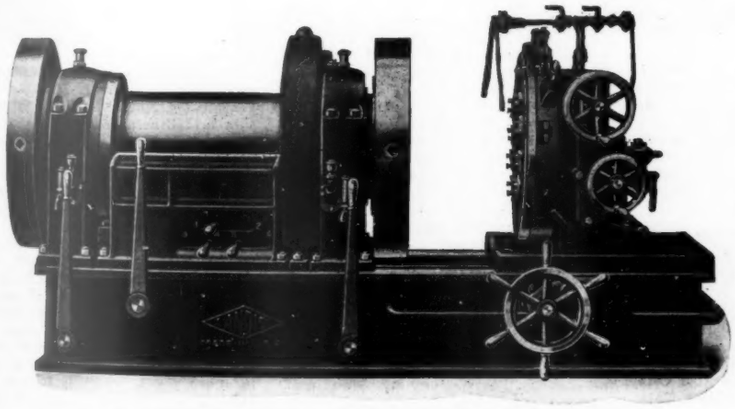

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News from Fields of Canada

By Victor Lauriston

Much activity in prospect in east central Alberta. Canadian Oil & Refining Co. to make a test of its holdings north of Many Island Lake. Victory Oil Co. to finish its well near Peace River. Glenwood Natural Gas Co.'s deep producer in Kent County, Ontario, to be given capacity test.

CHATHAM, Ont., Dec. 29.—While drilling throughout the Canadian west has slowed down with the coming of winter, a great deal of activity is in prospect for the east-central Alberta area, east of Edmonton. It is reported that contracts made by the various companies interested in this field call for the bringing in of at least 20 drilling outfits of which five are to be brought from the Montana Field.

The General Oil Development Co. of Vancouver, B. C., has secured drilling rights on the holdings of the Wainwright Oil Development Co. near the town of Wainwright, and will bring in a heavy rotary outfit with 4,000 feet of casing, recently used by the Boundary Bay Oil Co. in drilling an unsuccessful deep test in the Fraser Valley, British Columbia. The plant is now being dismantled for removal to Alberta, and the first test for the General Oil Development Co. will be rigged up just west of Wainwright. A tentative location was made some time ago on Section 25-46-7w4. The Wainwright Oil Development Co. is composed of Wainwright men who started drilling with a light outfit on Section 36-44-7w4 about two years ago, but after getting down about 200 feet had to discontinue work owing to difficulties in financing. The company has now arranged to bring in a heavy standard outfit from the Peace River district, formerly owned by the Peace River Western Oil Co., which will be used to finish the test on Section 36-44-7w4. The General Oil Development Co. is reported to be financing completion of this test.

The Crown Oil Co. of Edmonton, recently organized with $250,000 capitalization, will drill on holdings south and east of British Petroleums, Ltd. No. 2. J. O. Williams and associates of Calgary are organizing a company and have located a test on Section 20-45-6w4, 2 miles from British Petroleums No. 2 in the direction of Baxter Lake. The Edmonton Gas & Development Co., whose rotary outfit drilled the British Petroleum's producer is arranging for additional drilling outfits and will put down several additional tests next spring. An Edmonton syndicate is reported to have located a new test in Township 46-7w4, a few miles north of the Imperial Oil, Ltd. Grattan No. 1 near Fabyan. Irma Oil Holdings, Ltd., is arranging for a drilling outfit to put down a test on its acreage in Section 36-45-7w4, the section in which British Petroleums No. 1 is located, or else in Section 28 between the Fabyan and British Petroleum's wells.

On Section 4-45-8w4 the old Grattan Oil Co. gasser, drilled some years ago, which has since been shut in most of the time, is reported to be accumulating some oil under pressure. The gas from this well was used by Imperial Oil, Ltd. for drilling its Grattan tests, but the production has since been shut in. The oil production is, however, apparently of no large commercial significance.

Irma Oil Development Co., Section 28-45-9w4 landed the 13-inch casing and is going on down with a 10-inch hole. British Petroleums No. 2,, Section 30-46-6w4, has been capped, and the derrick and machinery dismantled and moved to the Edmonton Gas & Development Co.'s location. Further west, at Pigeon Lake, the Mutual Oil & Gas Co. test on Section 14-47-27w4 is drilling below 1,000 feet.

Southern Alberta

In southern Alberta, Prairie Natural Gas Co. No. 2 at Craigmyle, northeast of Delia, has got a second flow of gas, estimated 50,000 feet a day, at 392 feet, and will be drilled deeper.

In Sweetgrass district, southern Alberta, the Canadian Oil & Refining Co. (Rogers), Section 29-1-11w4 has recovered the tools and is again drilling, and following with 10-inch casing pretty close to the drill. The test is reported making 25 to 35 feet a day, and is down around 1,500 feet. This company is now arranging for a test of its central Alberta holdings, north of Many Island Lake district, where drilling will be commenced in the spring.

On the Quarantine Reserve and adjacent areas near Coutts, Alta., all drilling outfits are at present shut down. Eight tests were actually started in this area. They are the four tests of the Moodie syndicate, being the Anglo-Indian well, Section 14-1-15w4; the Moodie-Dundas, Section 4-1-15w4; the Moodie-Hall, Section 11-1-15w4; the Moodie-Somerville, Section 2-1-15w4, and the tests of Border Oils, Ltd., Section 6-1-14w4; Coutts-Sweetgrass Oils, Ltd. (McLean), Section 1-1-15w4; Lethbridge Oils, Ltd. (Baalim), Section 12-1-15w4, and Boundary Oil Co. (McCullough-Patterson), Section 3-1-15w4. Of these the Coutts-Sweetgrass (McLean) test is down 2,851 feet but had to quit owing to drilling difficulties and lack of funds.

It is reported that the Moodie syndicate has arranged to resume work on its holdings, and will probably finish the Moodie-Dundas test, which is down 1,215 feet or more with some gas production. A merger of other interests, including some companies which hold leases but so far have done no drilling, will probably go ahead with the Lethbridge Oils (Baalim) well on Section 12-1-15w4. This test is now down 2,030 feet and in good shape to continue drilling.

At the Canadian Oil & Refining (Rogers) test on Section 29-1-11w4, east of Coutts, A. Danford, tool dresser, was seriously injured recently when his leg was crushed and one arm broken under a heavy drilling tool. He is now in the Lethbridge hospital.

Novel Syndicate

A novel syndicate is reported to have been formed by a group of drillers in the Sunburst Field who are temporarily out of employment owing to the winter shut down in Montana. They have secured holdings east of Sweetgrass and are planning to put down a test. The location is near the Sam Sheppard ranch, about 10 miles east and south of Sweetgrass. Some of the drillers are to furnish the use fo an outfit, others the casing, others will provide the leases, while some will furnish the necessary money and grubstake and still others will do the actual work of drilling. If production is secured, the members of the syndicate are to share and share alike. They expect to finish the test in time to resume their regular jobs when the spring work opens in the Montana fields.

The Victory Oil Co., operating in the Peace River district, northern Alberta, has increased its capitalization from $50,000 to $100,000 to finance completion of its unfinished test near Peace River town, now down approximately 1,500 feet.

In the Ontario fields, the Glenwood Natural Gas Co.'s deep producer on the Hugh Shanks farm, Romney Township, Kent County, is reported to have been put in shape for a definite capacity test, which will be made in the next few weeks. Some oil, produced when the well flowed by heads, has already been shipped. East of Port Alma, the Union Natural Gas Co. No. 248, Truckenbrod farm, is reported ready to drill into the Trenton limestone. To the north, the Union Natural Gas Co. No. 249, Mancell farm, Tilbury East Township, is drilling. It is reported that Eugene Coste & Co. will locate their No. 6 test in Tilbury East Township, some distance west of the Union No. 249 Mancell.

In Essex County, Bon Jasperson is reported rigging up No. 6 test for gas near Kingsville. Mr. Jasperson has drilled five gassers at various points near Kingsville, all developing a small production from the old Essex gas sand at approximately 1,000 feet depth. The production will average about 50,000 feet a day to each well.

In Lambton County, the High Pressure Oil & Gas Co. is reported to have resumed drilling No. 2 deep test near Arkona.

Results of the Imperial Oil, Ltd., exploration in the Canadian West have so far been not altogether encouraging. No less than 12 wells drilled by Imperial Oil, Ltd. interests have been abandoned as failures. The only production of any commercial importance is in the Okotoks Field, 35 miles southwest of Calgary, where four wells of the Royalite Oil Co., an Imperial subsidiary, are producing wet gas. This gas is treated in the company's absorption plant near the wells, the oil extracted is shipped to one of the

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Kansas Oil Field News

By C. D. Lockwood

With the Russell County wildcat shut down awaiting completion of a line by the Sinclair Pipe Line Co., another well came in to maintain the interest that has been aroused lately in the Kansas fields. This well, however, is in Greenwood County, a quarter of a mile north of the Bason discovery in Section 14-24-9, and made 737 bbls. during the first 12 hours. It was drilled by Rodgers and others on the James Bratton lease and picked up the first sand at 2,098 feet, the bit going into shale at 2,105 feet. At 2,120 feet, another sand was encountered and at a total depth of 2,173 feet it started flowing at better than 60 bbls. an hour. It is located in the SW cor. NW NE, Section 14-24-9. Bason and others No. 1 Agard, NW cor. SE, in the same section, is still making 400 bbls. daily from sand at 2,134-69 feet.

A 100-bbl. well was brought in by Wilson & Martin in the old Wilmot Pool, in Cowley County, in their No. 1 Eastman. It made 7,000,000 feet of gas from sand found at 2,834-50 feet and then drilled into the oil pay at 2,850-52 feet. It will be deepened. This well has additional interest because it is the first oil well in the pool, the others being gassers.

The Montgomery County Pool, which was opened in August by the Bed Rank Oil Co., has been extended half a mile west of the discovery well on the Alloway farm by the bringing in of the company's No. 1 Taliaferro, which is flowing 100 bbls. naturally from sand topped at 1,204 feet and drilled to 1,210 feet. First oil was struck at 1,208 feet. The owners are getting ready to put the 3-inch tubing in and estimate that the well will be good for from 200 to 300 bbls. They are now waiting on tankage which is being built, and also on pipe line connections. No. 1 Alloway is now making 100 bbls. and No. 1 Lowerey, the second well in the pool is good for 180 bbls. The location of No. 1 Taliaferro is in the SW cor. NW NW, Section 17-35-17.

A location has been made in the next township to the east, in Labette County, by Prewitt & Hauser for a test and they are rigging up a machine and expect to begin drilling soon.

The total number of operations in the Kansas fields increased from 222 to 234 during the week ended December 22, the gain having been due entirely, however, to the completion of 13 wells during the latter week, while only 1 was finished during the week before. The 30 locations represented an increase of 1, as did also the 46 rigs, while the 71 drilling wells and the 74 wells shut down showed a loss of 1 each.

Two new locations were made in Russell County. The M. M. Valerious Oil Co. located No. 1 Phillips, SW cor. Section 3-13-13w, and Patton and others located their No. 1, SW cor. NE, Section 4-13-15w.

In Chase County, Heplee and others shut down their No. 1 Mattie, NE cor. NW, Section 33-19-9, at 1,300 feet.

In Elk County

In Elk County, Roth & Co. shut down No. 1 Westfall, NE cor. SW, Section 13-29-8, at 1,720 feet. Two dusters were abandoned, one being Mitchell and others' No. 1 Denton, NE cor. SW, Section 31-29-9, at 2,790 feet, and the other, Moines & Phillips' No. 2 Harris, C SW SW, Section 27-29-9, at 1,520 feet. A rig was in place for Mitchell & Perkins' No. 1 Denton, C SW SW, Section 34-29-9.

Deitrich and others had a 4,000,000-foot gasser in their No. 1 Smith, C NW NW, Section 34-29-9, from sand at 1,446-52 feet. Baxter & Mitchell were drilling at 1,470 feet in No. 2 McIntyre, C SW NW, Section 4-30-9, and Deitrich and others were drilling their No. 1 Schul, SE cor. Section 21-30-9, at 600 feet.

Another 4,000,000-foot gasser was drilled in by Denton and others in their No. 2 Denton, C NE SE, Section 4-30-9, sand depth being 1,510-20 feet. The Halstead Oil & Gas Co. abandoned No. 1 Osborn, NW cor. Section 8-31-11, as dry at 2,988 feet.

The Engina Oil Co. abandoned as dry at 1,910 feet its No. 1 Perdoja, CNL NW NE SW, Section 8-22-12. Clark and others also abandoned a duster in their No. 1 Jackson, C SE NW, Section 26-29-9, at 1,635 feet.

The Sinclair Oil & Gas Co. made a

(Continued on Page 98)

1—An operator of a Barber-Greene Ditcher said that the thing would run itself. After starting it in the right direction, he didn't touch the controls until it had dug more than twenty-five feet of ditch.

2—This shows a Barber-Greene Ditcher digging a storm sewer. Note how close to the curb it is required to operate.

3—Digging at the rate of three feet a minute, the Barber-Greene leaves a trail of cleanly cut ditch behind it.

4—A close-up picture of the digging boom. This boom is raised by a power hoist, which is operated by the power unit of the ditcher. It is lowered by gravity.

5—Digging straight down to a five foot depth, the Barber-Greene discharges the dirt to one side, piling it well back from the ditch.

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Its digging speed of 9 inches to 36 inches a minute for a ditch 5 feet deep and 18 inches wide, can be varied, depending on soil conditions. The digging boom can be locked in any position desired for digging. A power hoist raises it quickly, allowing it to pass large stones or pipes.

The Barber-Greene ditcher is self-propelled, mounted completely on crawler traction, and gets about quickly from job to job.

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West Kentucky-Tennessee

By Vern T. Whitney

But eight producers completed with a total of 142 bbls. flush. Gartland Estate's No. 3 Bud Kerr, Kettle Creek, 80 bbls., best of the week. Gillespie Oil Co.'s No. 4 Gillespie, Warren County, 15 bbls. Development in Russell and Adair counties. Madison County Tennessee, rumor of oil unfounded.

BOWLING GREEN, Ky., Dec. 31.—Due to the holiday season and the heavy rains of the past two weeks, very little work was accomplished in the western Kentucky fields.

The advance of 15 cents on December 22 and a 10-cent boost on December 28 in the price of crude, bringing the posted price of Somerset medium to $1.40 and Somerset Light to $1.55, plus 6 cents, has encouraged the operators.

The recent announcement by the Indian Refining Co. that, beginning January 1, they will discontinue the 32-cent deduction still being maintained on a number of properties in Warren and Allen Counties, by mutual agreement only, is a most important move. The statement by the refining company is, that on and after January 1, all contracts and division orders will be transferred to the Indian Pipe Line Corp., and that the Indian Refining Co., after that date, will purchase oil at a price to be posted by them, classed as Western Kentucky Light and Western Kentucky Heavy, the former to apply to oil testing 32 gravity or above, and the latter to oil testing less than 32 gravity. This will undoubtedly prove a great stimulus to development work on properties that have been handicapped by the arbitrary 32-cent deduction. On the other hand, it is possible some of the operators who have a large amount involved through this 32-cent deduction, may not agree to cancel their old contracts.

Week's Work

During the past week there were a total of 14 completions, 8 of which made producers, with a flush of 142 bbls., and 6 dry holes. Compared with the previous week, these figures show nine less completions, four less producers, 42 bbls. less production and 5 less dry holes or abandoned wells.

Considerable interest was aroused by a report that a good showing of oil had been encountered at 1,258 feet in a well on the J. B. Howard farm, consisting of 680 acres, 7 miles northwest of Jackson, Madison County, Tennessee, in the Gulf Embayment area. Several Kentucky operators visited the well and report the rumor unfounded, and that so far nothing has shown that could creaate any interest. Contract was let for a 2,600-foot hole and the well is being drilled with a large California type rotary rig. In this same county, 4 miles south of Jackson, the Kentucky-Tennessee Oil Syndicate's No. 1 Murchison is shut down at around 600 feet.

One Completion for Warren

The only completion for the week in Warren County was No. 4 Gillespie, of the Gillespie Oil Co., good for 15 bbls. at a depth of 1,134 feet. Shale was found from 980 to 1,065 feet and the sand from 1,123 to 1,132 feet, which was given a 60-quart shot. The well is in the new deep pool west of Rockfield, where a number of good completions have been registered during the past few months, and where wells have held up better than in any other part of the field. No. 5 location was made 300 feet east of No. 1 Bryant.

Cumberland County

In the Kettle Creek district of Cumberland County, No. 3 Bud Kerr of the Gartland estate, drilled as an offset to No. 1 Kim Crawford, is making 80 bbls. on jack. Oil is being produced from both the upper and lower Kerr sand, first being at 240 and the second at about 370 feet. When the sand was tapped at 240 feet the well pumped 180 bbls. the first 48 hours. Location for No. 4 was staked 400 feet north of No. 1. No. 1 Anderson, near the Kerr farm, completed in the upper Kerr sand a year ago, is now filled to the top with oil, and the operators are contemplating drilling through to the lower pay, and testing.

The McClintock Oil Co.'s No. 2 Anderson, the Gartland Estate's No. 2 Bud Kerr, the Daniel Boone Oil Co.'s No. 1 Widow Logan, the Petroleum Exploration Co.'s Nos. 1, 2 and 3 Blythe and W. S. Raydure's Nos. 1 and 2 Blythe are averaging from 4 to 5 bbls. per hour, each, according to reports of the Paragon Development Co. The wells are all located in the Kettle Creek district. W. S. Raydure's No. 1 Mrs. Coop, in the Sulphur Creek district, is pumping about 7 bbls. at 560 feet. No. 2 location has been made and will be started after the first of the year.

In the Bear Creek district, E. M. Treat's No. 1 Sam Riddle, at Modoc post office, produced at the rate of 80 bbls. daily during the past week. The working barrel was lost yesterday which will necessitate pulling the tubing and the well will be shut down for several days. The Paragon Development Co.'s No. 1 Spear, offset to the Riddle well, is being drilled to the pay at 80 feet below the Pencil Cave in what is known as the lower Modoc sand. On the Sarah Sheckles farm, 1 mile north of the Riddle and Spear wells, Wilcox Bros., of Cleveland, Ohio, are making hole at 400 feet in their initial test. Sulphur water was encountered at 365 feet, which was evidently accumulated in the First Sunnybrook sand, being about 340 feet below the Black shale.

The only well in the Sulphur Creek district making hole at this time is No. 4 A. Huddleston of the Combest Oil Corporation which is down to the cave sand.

Some time ago the writer gave a brief history of the Cumberland County fields from its early day, when the "Old American Well" was discovered on Crocus Creek. Since then some interesting data have been secured on Russell and Adair Counties, in central southern Kentucky, both adjoining Cumberland County.

Russell County

Most of the development work to date in Russell County has been in the Creelsboro Field on the north side of the Cumberland River, near the junction of Russell, Adair, Cumberland and Clinton Counties.

One of the recent completions in the Creelsboro Field is No. 1 on the Widow Coffey farm, which came in flowing 1,500 bbls. from the upper Sunnybrook sand at 265 feet. Late reports on this well, completed in August, state it is making 50 bbls.

This well caused quite a flurry and operators from far and wide became much interested and a great amount of development work will be done when market conditions warrant. There is an outlet for the crude at Creelsboro, where a refinery with a daily capacity of 500 bbls. is located. The refinery is owned by J. E. Carnahan and associates of Canton, Ohio, who have been among the most consistent operators of the Creelsboro Field, having completed 22 producing wells. Their No. 14 Coffey, on the north side of the Cumberland River, was brought in a short time ago for 50 bbls. flush, while No. 15 is making 15 bbls. on power. These people recently completed Nos. 1 and 2 W. C. Dalton for 10 bbls. each at 278 and 286 feet, respectively. No. 2 Blakely is pumping in the neighborhood of 48 bbls. from both the upper and the lower Sunnybrook sands.

Other late completions show a dry hole at 398 feet for Weller & Co. in No. 1 on the E. Mann tract, and a small pumper for the McMeade Oil Co. in its No. 4 on the Campbell Bros.' farm. The first Sunnybrook sand is encountered in the Creelsboro Field at about 265 feet and the second at around 400 feet. No deeper drilling has been done below this level on the north side of the river.

First Well Drilled in 1868

The first development in Russell County dates back to 1868, when a group of four wells were drilled on the south side of the Cumberland River, about 1 mile from Creelsboro, near the Clinton County line. These wells came in at a little less than 300 feet in depth, and all were said to be of good caliber. The best was the famous "Old Gabbert Well," estimated around 500 bbls. Two other wells on this farm were reported at 60 bbls. each. Soon after these wells were drilled in, parties owning them erected a crude refinery and undertook to ship the product to Nashville, Tenn., using barges and rafts. Oil was then bringing only 59 cents per barrel and the venture proved so unprofitable the wells were plugged and operations ceased.

About the same time two wells were drilled in the eastern part of the county, one on a prong of Wolf Creek, to a depth of 600 and 800 feet, respectively, both credited with a considerable amount of fine grade oil. No other development was recorded until 1900-1902, when six or seven wells were drilled, three being near the town of Creelsboro, on the north side of the Cumberland River, which showed a daily production of from 20 to 40 bbls. One well was 450 feet in depth in the second Sunnybrook sand and the other two were drilled to around 300 to 350 feet. The remainder of this group were located in the eastern part of the county in the vicinity of one of the wells drilled in 1868, but no definite data regarding these wells were obtainable. With no pipe line facilities, excessive cost of marketing and the low price then, prevailing, it did not look very encouraging to continue development work so the field was again abandoned.

Drilling Resumed

In 1920, drilling activities were resumed, particularly in the southern part of the county on both sides of the Cumberland River and some very promising wells were struck. The McMeade Oil Co., of Louisville, completed three wells on the Charles and John Campbell farm, 1 mile from Creelsboro, on the south side of the river and a short distance from the discovery wells on the Gabbert farm, which flowed considerable oil before being properly capped. These wells have been pumped continuously for the past four years and have made 4 bbls. each since being pumped. They were completed in the first Sunnybrook sand. On the same

(Continued on Page 84)

Pennsylvania-West Virginia

By D. S. Wakenight

PITTSBURGH, Pa., Dec. 31.—Field developments the past week proved of little importance. The number of wells completed were fewer and the average size much smaller. In the entire Eastern fields not a well was completed that had an initial production of more than 20 bbls. A good many failed to find oil or gas and went into the discard.

Southeastern Ohio

The deep sand territory in southeastern Ohio had quite a number of completions during the week but none better than light pumpers. In the northwest quarter of Section 12, Pipe Township, Coshocton County, the Pure Oil Co. completed and shot in the Clinton sand a test on the William L. Harris farm, good for 15 bbls. a day. The location is 800 feet south of the company's production on the Calvin Tish farm. Five miles west of Millersburg, in Monroe Township, Holmes County, the East Ohio Gas Co.'s test on the C. G. Jarvis farm is a gasser good for 4,000,000 feet a day in the Clinton sand. In Section 15, Richland Township, the Reno Oil Co. completed in the Clinton sand a second test on the D. F. Pipes farm, not good for more than 5 bbls. a day. Four miles west of Millersburg, in Monroe Township, the East Ohio Gas Co. has a Clinton sand gasser at a second test on the A. J. Baker farm. In the same township, three-fourths of a mile west of the last named well, the Medina Oil & Gas Co. has a duster in the Clinton sand at a test on the A. W. Fendrick farm.

Dusters in Fairfield and Licking

In Section 33, Rush Creek Township, Fairfield County, the Hall Oil & Gas Co.'s test on the C. C. Brandt farm is dry in the Clinton sand. South of Newark, Newark Township, Licking County, W. W. and A. T. Wehrle drilled a test on the C. A. Lynn farm through the Big Lime formation and dry. In Franklin Township, the same parties are drilling a test on the Anna J. Miller farm. In Lot 16, Madison Township, Licking County, Spindler & Donaldson completed in the Berea grit No. 6 on the C. A. Bounds farm. They swabbed 7 bbls. from it the first 24 hours after shot. In Lot 22, Franklin Township, Ralph Bros. completed and put to pumping No. 5 on the Boy Scouts' farm. The well produced 8 bbls. the first 24 hours and is the best completed on this farm. In Licking Township, Muskingum County, the Pure Oil Co. started to drill a test on the Millard Nethers farm to the Clinton sand. In Independence Township, Washington County, Harris & Co. completed in the Squaw sand a test on the Rose Edwards farm, a gasser good for 500,000 feet a day.

West Virginia

Operations in the West Virginia fields are dragging except in two or three of the gas pools. On Little Grave Creek, Union district, Marshall County, the Decem Development Co. has completed in the Big Injun sand No. 3 on the Thomas Markey farm, good for 10 bbls. a day. On Davies run, Lincoln district, Marion County, Funk & Null drilled their old test on the John Amos farm from the Big Injun to the fifth sand. It is a light gasser in the lower sand. In Burning Springs district, Wirt County,

(Continued on Page 84)

Cyclone Protection

For Pumping Wells

The other day a field superintendent at Powell told us of a wind storm he had witnessed at Mannford, Okla., during which 3 of his company's pumping rigs were blown over. In all three cases tubing was broken off at the casinghead, but GUIBERSON Catchers had been installed, and no tubing dropped over 4 inches.

GUIBERSON Catchers have played the role of property guardians during every oil field cyclone of recent years. No matter how severe the above-ground damage, the underground damage proves practically nil for the well equipped with a GUIBERSON Catcher. You'll find the modern operator everywhere, availing himself of this protection. Tubing is safeguarded at all times, whether running in, suspended, or coming out.

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Wyoming Field Operations

By F. B. Taylor

Utah Oil & Refining Co.'s well on Black Mountain, showing for 300 bbls., opens new field in Big Horn Basin. Producers & Refiners to start work on two Navajo tracts in New Mexico. Shoshone Oil Co. gets 800-bbl. producer in Sunburst Field, Montana. Ohio Co. to operate Sunburst Co. holdings.

CASPER, Wyo., Dec. 30.—The Wellington gasser of the Union Oil Co. is showing a pressure of 1,700 pounds since being shut in and the job is holding well. The cement cap has shown no signs of weak spots and the well is thought to be closed in successfully.

Land title disputes are cropping out in the Fort Collins area due to the strike of the big gasser and many operating companies are busy securing holdings. The Sinclair interests have taken over a large acreage near Loveland, Colo., south of Fort Collins, and it is expected this will be drilled at once.

The report of the Franco-Wyoming Oil Co., made public for the past year, shows substantial profits from the lands of the firm that went to make up the main part of the holdings of the Midwest Refining Co. in the Salt Creek Field.

The Franco-Wyoming Oil Co. was formed of French and American capital and at one time held practically all of the Salt Creek area. The company built several camps in the field and operated on a fairly large scale, considering the handicaps of those days. It also laid a pipe line to Casper and built a refinery on the east side of this city which later was taken over by the Midwest and moved to the present site of the Midwest and Standard plants. The end of the pipe line was also shifted when the refinery was moved.

Besides holdings in Salt Creek the Franco-Wyoming also was interested heavily in the Oregon basin area near Cody, in Park County and in several other areas in the Big Horn Basin.

P. & R. in New Mexico

The Producers & Refiners will shortly start work on two tracts on the Navajo Indian reservation in New Mexico, one on what is termed the Table Mesa Dome and the other on the Totico structure. The latter structure was in dispute for a time between the Producers & Refiners and the Gypsy Oil Co. and the difference was settled by the Gypsy and the Producers & Refiners agreeing to develop the holdings jointly. The New Mexico country is expected to develop its production, if any, in the base of the Cretaceous, but the geology is rather new to the oil operators and no deep test has ever been made to show what the sands are. Correlations made from the outcrops on the mountain sides are not considered by many as reliable enough for areas far from the mountains.

The Indiana Oil & Mining Co. and the Howe Oil Co., two firms that were operating near Shoshoni a few years ago, are being sued by the Shoshoni Lumber Co. for monies due. The Indiana firm is made up of parties from Hartford City, Ind. and the Howe Co. hails from Howe, Neb.

The Glenrock refinery of the Mutual Oil Co. is expected to resume operations the coming month. This plant has been shut down for some weeks due to the low price of gasoline and petroleum products and now the market appears to be turning the officials are preparing to start fires under the stills again.

The Mutual Oil Co. has also taken a hint from the Midwest plan in Salt Creek and is experimenting with the electric drive for pumping wells in the Big Muddy Field. This field is controlled by the Mutual except for what territory the Ohio Oil Co. has on the east side of the field and the Mutual is endeavoring to operate the field as economically as possible, consistent with good management.

New Field in Big Horn Basin

According to the statement of the inventor of the carbon black, gasoline, electricity plant being operated in the Lance Creek Field, the plant has produced an average of 1 to 1½ pounds of black to the thousand feet of gas, three gallons of gasoline from same and about 9 kilowatts per hour of electricity. This is the plant that was placed in Lance Creek as an experiment to determine whether it is practical to generate electricity, extract gasoline content and make lamp black from natural gas at one operation.

The Black Mountain well of the Utah Oil & Refining Co., in the Big Horn Basin country, east of Thermopolis, is being tested for production by pumping. It is now showing for about 300 bbls. daily and earthen storage has been constructed for a 30-day period. This well opens up a new field in the Big Horn Basin. The oil will probably go to Greybull, where the Standard of Indiana has an asphalt plant that can handle this grade of crude to advantage and the plant of the Alliance Oil & Refining Co. at Thermopolis is also equipped to handle this oil. The gravity is around 25 degrees which makes it hard to handle in a pipe line in winter.

Montana

The Shoshone Oil Co., a company of local capitalists, struck a good well on Section 4-34-2w in the central part of the Sunburst Field of Montana the past week. The Ellis sand was found at 1,455 feet and the sand was drilled 30 feet in when the flows became too heavy to continue the work and the well was shut in and connected to pipe line. It is estimated at 800 bbls. The location is in the heart of the field and does not extend the operation in any way. In fact it was a foregone conclusion that the Shoshone would get a good well for the Sweetgrass Oil Co. drilled in a good well some weeks ago just across the line from the Shoshone location and the Sweetgrass well made close to 1,000 bbls. daily.

The Sunburst Oil Co. also found the Ellis sand on Section 4-34-2w, the same section that the Shoshone found its big well, but the Sunburst well appears to have struck a hard place in the sand and the well is only a little better than a dry hole. It will be shot. The sand was struck at 1,485 feet.

The Ohio Oil Co. and the Sunburst Oil Co., two of the pioneer operators in Sunburst Field, have reached an agreement by which the Ohio becomes the operating firm for the holdings of the Sunburst Oil Co. This means about 3,500 acres of land located in the central part of the field. This agreement has been in force on a part of this acreage for some time past and by the new agreement the Sunburst Oil Co. turns over to the Ohio interests, a one-half interest in all the Sunburst holdings in the field. The Ohio will have control of the lands of the Sunburst and will do the development work and operate the wells and also market the production. The agreement also carries a clause by which either firm has the first chance to buy out the other if the other member wishes to dispose of his holdings.

In the Cat Creek Field in central Montana the work is shut down in all the edge wells except the Neudigate test on Section 18-16-26 on the Kootenai Dome, a wildcat. This well is now setting 2,100 feet of 8-inch casing and expects to reach the Amsden sand within the next 100 feet. The Amsden sand produces a heavy, black oil in the Soap Creek Field in southern Montana.

New Petroleum County

The new county of Petroleum is now an established fact and this takes from Fergus County the eastern half, which includes the Cat Creek Field. Petroleum County will receive all the taxes formerly paid by the oil companies to Fergus County and with this income the new county hopes to build roads and other improvements that were reported to have been placed in the western part of Fergus County in past years with the aid of sums derived from the oil business.

The Wilson & Fisher wildcat drilling with a water well machine on Section 30-15-26 is shut down close to the top of the first Kootenai sand at 480 feet and expects to start work after the holidays. This well found a showing of shale oil about 400 feet and caused a little excitement south of the Cat Creek Field.

The California Oil Co. is drilling two wells on the west extension of Cat Creek; one on Section 12-15-28 is now 200 feet deep and about ready to hitch on the beam, and the other is on Section 2-15-28, northwest of the location on 12 about a mile and is spudding.

Soap Creek operators having holdings in that area are expecting a demand for heavy oils the coming season and several wells are being planned. First of all a pipe line will have to be built to bring the production to the railroad and only the larger companies have holdings sufficient to warrant the investment.

Pipe Line Runs

Pipe line runs for the last week of the year showed an increase due to the pipe lines being in good shape during the week and having no breakdowns that held up shipments. The following may be taken as an average output of the Rocky Mountain region during winter weather.

Salt Creek	129,500
Teapot	4,400
Big Muddy	3,785
Grass Creek	3,150
Elk Basin	1,565
Notches	nd
Greybull	145
Rock River	3,500
Lance Creek	2,825
Poison Spider	410
Osage	650
Hamilton Dome	535
Lander	450
Pilot Butte	80
Lost Soldier	5,500
Ferris	125
Cat Creek	4,350
Sunburst	475
Miscellaneous	600
Total	162,045

Tests to Be Made

The Hatfield Oil Co., operating on the Eight Mile Lake Dome south of Rawlins, Wyo., has made a location for a second well and is about ready to spud in. The first well on this structure developed a heavy gas flow and the Hatfield Co. expects to find oil production further down the slope of the structure.

Two structures in Hot Springs County are to be tested this coming spring, according to plans now being made. The Sand Draw Dome about 10 miles west of Kirby is one and the Zimmerman Butte Dome is the other. The Zimmerman has already had two wells drilled upon it, both of which proved dusters, but the Sand Draw Dome has never been drilled. This latter structure is quite small, the dome covering only about half a section and the Eagle sandstone forms the escarpment. If this structure is found productive, it will likely prove a very small operation, but the chances look very good for finding the sands holding either oil or gas.

In Montana, H. E. Frye and others have started a well on Section 14-2-22e in Yellowstone County and another test is starting in the same township by C. R. McMenamin and others. These are to be wildcat tests and nothing has been drilled in that vicinity.

In Wheatland County, same State, E. H. Churchill and others have started a well in Section 35-7-13 on a wildcat test. This is near the center of the State and also in a wholly new territory.

Tank car shipments of crude oil from the Lance Creek Field are averaging around 24 cars daily due to the big well recently drilled there by the Ohio Oil Co. Most of this crude is coming to Casper and the tankage at Lusk and in the field is all filled.

LATE NEWS FROM GULF COAST

HOUSTON, Texas, Dec. 31.—The United North and South Oil Co.'s No. 1 Lopez, in Guadalupe County, across the San Marcos River, southwest of the Luling Field, is flowing 250 bbls. by heads at 2,170 feet. It is 3 miles in advance of production. Same company's No. 1 Shanklin, 1,100 feet south, a deep test, was abandoned as dry. The well on the Lopez calls for six offsets, which will start as soon as material can be assembled. In the old part of the Luling Field, the M. K. Towns Production Co.'s No. 5 Merriweather blew in and is now flowing 1,600 bbls. per day.

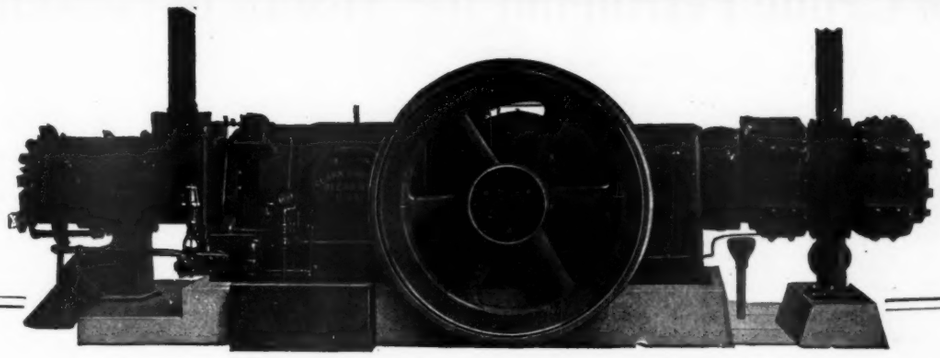
The South Dayton Oil Co.'s No. 1 Rivere, south of Liberty in Liberty County in the Coastal Belt, is bailing 15 bbls. per day at 3,140 feet. It will be rigged to pump. It is a wildcat test in a district where previously drilled wells have made some oil, but the Rivere well is the best completion to date. Onkle and others have a 50-bbl. pumper in the old Dayton Pool at 880 feet and the Old Colony Oil Co. is offsetting with No. 3. Same company's No. 2 has been pumping for three years. The Union Sulphur Co. has drilled four tests for sulphur deposits south of Liberty and has started No. 5 test.

The Gulf Production Co.'s No. 3 Peveito in the Orange Pool, an old hole being drilled deeper, blew out at 4,075 feet and is throwing sand, rock and water with the gas from the hole.

STEEL SHAPE CHANGES SHOWN IN NEW BOOK

The ninth edition of the Shape Book, published by the Carnegie Steel Co., is now off the press and available to users of steel.

The new edition is the result of a thorough check and revision of all the sections rolled by Carnegie Steel Co. on its shape, rail, bar and plate mills, and while no important changes have been made in the regular sizes of structural and bar mill sizes of beams, channels, angles, tees and zees, several changes have been made in the large number of special sections rolled by that company, such as concrete reinforcement bars, window and casement sections, automobile rim sections and other miscellaneous bar mill sections; certain rails and splice bar sections, which have become obsolete since the issue of the preceding eighth edition, have been eliminated in the present issue.



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Statistics of Crude Petroleum for Month of November, 1923

Daily average production of crude petroleum in the United States in November, measured by the quantity transported from the producing properties, amounted to 2,150,866 barrels, according to the Geological Survey, an increase of 22,576 barrels over the daily average for October. Because declines are recorded in the weekly estimates for December, it seems likely that the peak of production was reached in November. Daily average imports (202,833 barrels) decreased 19,683 barrels; daily average exports (46,567 barrels) increased 4,148 barrels, and daily average indicated deliveries to consumers (2,040,133 barrels) decreased 5,146 barrels. The increased supply over demand caused an addition to stocks, exclusive of crude oil held by consumers, of 8,010,000 barrels. On November 30, stocks of petroleum, including crude oil at refineries, amounted to over 350,000,000 barrels.

It is estimated that the total production of petroleum in the United States in 1923, including fuel consumed on the leases and oil produced but not transported from producing properties, items not included in the Survey's monthly press bulletins, will approximate 735,000,000 barrels. This is an increase of more than 30 per cent over the output of 1922 and is more than double the production of 1918. An estimate of the world's production of petroleum in 1923 indicates a total of 1,005,000,000 barrels.

PRODUCTION

The figures given below for the States east of California, compiled from reports made by pipe line and other companies to the Geological Survey, show the quantity of petroleum transported from producing properties. Petroleum consumed on the leases and produced but not transported from the producing properties is not included in the preliminary figures. These items are given in the final annual statistics, which show gross production—all the oil brought to the surface. The figures for California are those reported by the Pacific Coast office of the American Petroleum Institute and show gross production. Figures for 1923 are subject to revision, those for 1922 are final and include oil consumed on the leases and net increase of producers' stocks.

BY STATES

(Barrels of 42 U. S. Gallons)

	October, 1923		November, 1923			
	Total	Daily Av.	Total	Daily Av.	Jan.-Nov., '23	Jan.-Nov., '22
Arkansas	3,046,000	98,258	2,723,000	90,767	31,899,000	11,079,000
California	24,576,000	792,787	22,395,000	746,595	241,829,000	123,174,000
Colorado	5,200	168	5,700	190	62,500	89,500
Illinois	733,000	23,645	695,000	23,167	8,026,000	8,657,000
Indiana:						
Southwestern	64,000	2,065	62,000	2,066	733,000	781,000
Northeastern	28,000	903	18,000	600	233,000	221,000
Total Indiana	92,000	2,968	80,000	2,666	966,000	1,002,000
Kansas	2,166,000	69,871	2,378,000	79,267	25,839,000	29,318,000
Kentucky	686,400	22,142	627,400	20,913	7,434,000	8,293,200
Louisiana:						
Gulf Coast	187,000	6,032	181,000	6,033	2,073,000	1,571,000
Rest of State	1,674,000	54,000	1,605,000	53,500	20,450,000	31,241,000
Total La.	1,861,000	60,032	1,786,000	59,533	22,523,000	32,812,000
Montana	192,000	6,194	138,000	4,600	2,383,000	2,207,000
New York	116,000	3,710	106,000	3,533	1,140,000	920,000
Ohio:						
Central and East.	435,000	14,032	402,000	13,400	4,518,000	4,355,000
Northwestern	190,000	6,129	172,000	5,733	1,990,000	1,872,000
Total Ohio	625,000	20,161	574,000	19,133	6,508,000	6,227,000
Oklahoma:						
Osage County	*2,700,000	87,097	2,356,000	78,533	34,691,000	34,480,000
Rest of State	*9,055,000	292,083	10,018,000	333,939	112,848,000	101,726,000
Total Okla.	*11,755,000	379,180	12,374,000	412,472	147,539,000	136,206,000
Pennsylvania	632,000	20,387	565,000	18,833	6,710,000	6,828,000
Tennessee	600	19	600	20	7,000	8,800
Texas:						
Gulf Coast	2,348,000	75,742	2,129,000	70,967	27,178,000	32,337,000
Rest of State	12,555,000	405,000	13,029,000	434,300	88,426,000	77,470,000
Total Texas	14,903,000	480,742	15,158,000	505,267	115,604,000	109,807,000
West Virginia	579,000	18,678	482,000	16,067	5,905,000	6,441,000
Wyoming:						
Salt Creek	3,268,000	105,419	3,537,000	117,900	31,784,000	16,906,000
Rest of State	741,800	23,929	898,300	29,943	7,477,500	6,902,500
Total Wyoming	4,009,800	129,348	4,435,300	147,843	39,261,500	23,808,500
Grand total	*65,977,000	2,128,290	64,526,000	2,150,866	663,636,000	506,878,000

*Revised.

BY FIELDS

(Barrels of 42 U. S. Gallons)

	October, 1923		November, 1923			
	Total	Daily Av.	Total	Daily Av.	Jan.-Nov., '23	Jan.-Nov., '22
Appalachian	2,448,000	78,968	2,183,000	72,766	25,714,000	26,846,000
Lima-Indiana	218,000	7,032	190,000	6,333	2,223,000	2,093,000
Illinois & S. W. Ind.	797,000	25,710	767,000	25,233	8,759,000	9,438,000
Mid-Continent	31,196,000	1,006,309	32,109,000	1,070,306	314,153,000	285,314,000
Gulf Coast	2,535,000	81,774	2,310,000	77,000	29,251,000	33,908,000
Rocky Mountain	4,207,000	135,710	4,579,000	152,633	41,707,000	26,105,000
California	24,576,000	792,787	22,398,000	746,595	241,829,000	123,174,000
Grand total	65,977,000	2,128,290	64,526,000	2,150,866	663,636,000	506,878,000

STOCKS

Stocks of crude petroleum for statistical purposes are classified as follows:

1. Producers' stocks: Petroleum held on the producing properties (lease or "field" storage). Producers' stocks are reported to the Geological Survey annually and are included in the Survey's final statistics.

2. Pipe line and tank farm stocks: Petroleum that has been transported from the producing properties but not delivered at refineries or at other points of consumption and is held on tank farms, in tanks along pipe lines, and in the lines. Pipe line and tank farm stocks constitute approximately 90 per cent of the petroleum held in storage in the United States. For the States east of California such stocks are reported monthly to the Geological Survey as gross stocks, including the total contents of tanks and pipe lines, and as net stocks, which are gross stocks minus sediment and water. The stocks reported for California are compiled by the Pacific Coast office of the American Petroleum Institute and include producers, pipe line and tank farm stocks (but not refinery stocks) of crude oil, residuum and tops.

3. Refinery and other consumers' stocks: Petroleum that has been delivered at refineries and at other points of consumption. Stocks of crude petroleum held at refineries are compiled by the Bureau of Mines.

PIPE LINE AND TANK FARM STOCKS OF CRUDE PETROLEUM ON LAST DAY OF MONTH—(Barrels)

Stocks are reported by fields of origin of oil, not by location of storage	Oct. 31, '23	Nov. 30, '23	Nov. 30, '22
Domestic petroleum:			
East of California: Gross and net pipe line and tank farm stocks:			
Appalachian:			
N. Y., Pa., W. Va., Eastern and Central Ohio:			
Gross	6,611,000	6,578,000	6,201,000
Net	6,332,000	6,302,000	5,940,000
Kentucky:			
Gross	3,144,000	3,076,000	2,958,000
Net	3,011,000	2,946,000	2,842,000
Lima-Indiana:			
Gross	1,137,000	1,166,000	915,000
Net	961,000	930,000	661,000
Illinois-S. W. Indiana:			
Gross	1,042,000	11,953,000	10,532,000
Net	11,[illegible]4,000	11,507,000	10,031,000
Mid-Continent:			
Oklahoma, Kansas, Central and North Texas:			
Gross	175,355,000	180,644,000	147,612,000
Net	164,070,000	169,572,000	137,240,000
Northern Louisiana and Arkansas:			
Gross	30,483,000	31,752,000	16,001,000
Net	28,913,000	29,091,000	15,370,000
Gulf Coast:			
Gross	24,946,000	25,075,000	27,027,000
Net	24,598,000	24,730,000	25,431,000
Rocky Mountain:			
Gross	14,828,000	16,815,000	1,488,000
Net	14,819,000	16,805,000	1,475,000
Total pipe line and tank farm stocks east of Cal.:			
Gross	268,446,000	277,058,000	212,834,000
Net	254,139,000	261,883,000	199,091,000
California (as stated above)	60,127,000	60,346,000	48,851,000
Imported crude petroleum held in the U. S. by importers elsewhere than at refineries:			
At Atlantic Coast stations	260,000	348,000	*
At Gulf Coast stations	830,000	789,000	*
Total	1,090,000	1,137,000	
Total domestic net pipe line and tank farm stocks east of California, producers, pipe line and tank farm stocks in California, plus stocks of imported crude petroleum held in the U. S. by importers elsewhere than at refineries	315,356,000	323,366,000	*

*Not available.

DAYS' SUPPLY OF PIPE LINE AND TANK FARM STOCKS

(Based on monthly rate of deliveries of crude petroleum to consumers)

Sept., 1923, 152; Oct., 1923, 154; Nov., 1923, 159.

IMPORTS AND EXPORTS OF CRUDE PETROLEUM—(Barrels)

(From Bureau of Foreign and Domestic Commerce)

	October, 1923		November, 1923			
	Total	Daily Av.	Total	Daily Av.	Jan.-Nov., '23	Jan.-Nov., '22
*Imports:						
From Mexico	6,681,000	215,516	6,085,000	202,833	71,147,000	119,154,000
From other coun.	217,000	7,000	.....	.....	2,429,000	988,000
Total	6,898,000	222,516	6,085,000	202,833	73,576,000	120,142,000
Exports:						
Domestic crude oil:						
To Canada	830,000	26,774	662,000	22,067	7,837,000	7,182,000
To other coun.	462,000	14,903	702,000	23,400	7,171,000	1,705,000
Foreign crude oil	23,000	742	33,000	1,100	281,000	154,000
Total	1,315,000	42,419	1,397,000	46,567	15,289,000	9,041,000
Excess of imports over exports	5,583,000	180,097	4,688,000	156,266	58,287,000	111,101,000

*Include some topped oil.

CLASSIFICATION OF IMPORTS OF MEXICAN CRUDE PETROLEUM—(Reported to Geological Survey)

Percentage of Mexican imports: Crude oil, lighter than 16°, Oct., 1923, 21; Nov., 1923, 19; Jan.-Nov., 1923, 29; Jan.-Nov., 1922, 70; 16° and heavier, Oct., 1923, 79; Nov., 1923, 81; Jan.-Nov., 1923, 71; Jan.-Nov., 1922, 30.

INDICATED DELIVERIES TO CONSUMERS OF DOMESTIC AND IMPORTED CRUDE PETROLEUM—(Barrels)

(Based on formula—indicated deliveries equal production plus imports minus exports plus stocks at beginning of month, minus stocks at end of month.)

Domestic petroleum, by fields of origin:

	October, 1923*		November, 1923			
	Total	Daily Av.	Total	Daily Av.	Jan.-Nov., '23	Jan.-Nov., '22
Appalachian	2,317,000	74,742	2,279,000	75,967	25,334,000	24,829,000
Lima-Indiana	178,000	5,742	161,000	5,366	1,978,000	2,435,000
Ill. and S. W. Ind.	593,000	19,129	744,000	24,800	7,392,000	6,963,000
Mid-Continent	27,055,000	872,742	26,429,000	880,967	266,355,000	232,388,000
Gulf Coast	2,164,000	69,806	2,178,000	72,600	29,302,000	26,170,000
Rocky Mountain	2,575,000	83,065	2,593,000	86,433	30,783,000	25,584,000
California	23,285,000	751,129	22,179,000	739,300	228,134,000	109,345,000
Deliv. and exports	58,167,000	1,876,355	56,563,000	1,885,433	589,278,000	428,010,000
Exports of domestic crude oil	1,292,000	41,677	1,364,000	45,467	15,008,000	8,887,000
Deliveries	56,875,000	1,834,678	55,199,000	1,839,966	574,270,000	419,123,000
Imported petroleum	6,537,000	210,871	6,005,000	200,167	73,976,000	116,453,000
Deliveries of domestic and imported petroleum	63,412,000	2,045,549	61,204,000	2,040,133	648,246,000	535,576,000

*Revised.

NUMBER OF PRODUCING WELLS COMPLETED*

Sept., 1923, 1,278; Oct., 1923, †1,140; Nov., 1923, 1,007; Jan.-Nov., 1923, 15,396; Jan.-Nov., 1922, 16,141.

*For States east of California, from The Oil & Gas Journal; for California, from the American Petroleum Institute. †Revised.

SHIPMENTS OF CALIFORNIA OIL THROUGH PANAMA CANAL TO EASTERN PORTS IN THE UNITED STATES

(From the Panama Canal Record)

(Compiled from declaration by masters of vessels reported in tons of 2,240 pounds)

Crude oil, long tons, Oct., 1923, 702,010; Nov., 1923, 742,678; Jan.-Nov., 1923*, 6,540,372; bbls. (approx.), Oct., 1923, 5,125,000; Nov., 1923, 5,290,000; Jan.-Nov., 1923*, 47,811,000; refined products, long tons, Oct., 1923, 29,514; Nov., 1923, 29,400; Jan.-Nov., 1923*, 434,310.

*In some of the manifests for the first few months of 1923, crude oil is not declared as such.

EXPORTS OF PETROLEUM PRODUCTS IN NOVEMBER AND ELEVEN MONTHS

Domestic exports of crude and refined oils during the month of November and the eleven months of 1923 are reported by the U. S. Bureau of Foreign and Domestic Commerce as follows:

	Month of November		Eleven Mos. End. November	
	1922	1923	1922	1923
Petroleum, crude ..... gallons	35,970,462	57,292,828	373,239,738	629,657,271
Petroleum, crude ..... dollars	1,421,207	1,577,814	16,784,839	26,784,337
Total refined petroleum ..... gallons	211,837,100	248,716,776	2,274,175,571	2,963,572,330
Total refined petroleum ..... dollars	23,620,314	21,345,169	287,869,147	300,657,501
Gasoline, naphtha and other light products ..... gallons	40,817,149	53,855,518	531,839,348	772,892,015
Gasoline, naphtha and other light products ..... dollars	8,427,043	7,044,735	117,388,256	128,456,321
Oils:				
Illuminating ..... gallons	76,769,411	73,991,131	817,097,287	777,104,499
Illuminating ..... dollars	7,037,924	6,106,017	75,977,566	70,736,617
Gas and fuel ..... gallons	66,511,948	98,840,899	617,669,154	1,097,194,111
Gas and fuel ..... dollars	2,015,667	2,659,865	23,679,153	31,916,700
Lubricating ..... gallons	27,738,592	22,039,228	307,569,782	315,381,704
Lubricating ..... dollars	6,139,690	5,534,552	70,824,173	69,551,320
Paraffin wax ..... pounds	24,361,186	28,662,073	258,182,549	299,502,660
Paraffin wax ..... dollars	824,910	948,145	8,484,059	10,323,007

FOR A QUARTER OF A CENTURY

Time is the real and only true test of a product. This is especially true in the oil producing industry. For a "quarter of a Century" the American Well and Prospecting Company of Corsicana, Texas, has been engaged in the manufacturing of oil field equipment and supplies.

During these many years, "Gumbo Buster" products have proven time and time again their complete dependability.

Gumbo Buster Products are built for strength and service. Their design is as simple as possible, the parts are few, the material the best obtainable for the purpose.

Combined with the scientific study naturally necessary to produce any serviceable piece of oil field machinery, in Gumbo Buster products is found the actual experiences of twenty-five years of association with the problems of the men in the field.

"GUMBO BUSTER" PRODUCTS

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Distributors

TEXAS—OKLAHOMA—ARKANSAS—LOUISIANA

Manufactured by

AMERICAN WELL & PROSPECTING CO.

CORSICANA, TEXAS Branch: LOS ANGELES, California

EQUIPMENT AND SUPPLIES

APPOINTED MANAGER FOR TRACTOR SALES

H. A. Reed, one of the foremost tractor sales managers, who has had wide experience with the International Harvester Co., the Case Threshing Machine Co., Hart-Parr Co., and the Allis-Chalmers Manufacturing Co., has been appointed general sales manager for the Bear Tractors, Inc.

R. C. Brewsaugh, who was associated with Mr. Reed and who is reputed to be the oldest man in the tractor business continuously, has been appointed assistant sales manager and advertising manager for the Bear Tractors. His experience started with the old Gas Traction Co., the concern which marketed the Big 4, the first gasoline tractor that the world ever saw, and continued even in war time when he served as assistant production manager of the New York Ordnance District, having charge of the tank, truck and tractor division.

C. A. Bishop is the new district sales manager for the company with headquarters in Kansas City, his territory covering the north central States. Harvey E. Sewell has also been made a district sales manager with headquarters in Philadelphia, and the expert business of the Bear Tractors will be handled by Pablo Homs, of 44 Whitehall Street, New York City, who organized the foreign forces of the old Gas Traction Co. in 1910-11.

DEATH TAKES EXPERT ON TURBO-GENERATOR

Ralph E. Gilman, special engineer in charge of turbo-generator engineering of the Westinghouse Electric & Manufacturing Co., died recently in the Methodist Hospital, Los Angeles. Mr. Gilman, on account of illness, had been granted a leave of absence from his duties in East Pittsburgh, Pa., to go to the coast in an effort to improve his health.

He was a graduate of the Leland Stanford University of Palo Alto, Calif., receiving his E. E. degree in 1898. He entered the employ of the Westinghouse Co. immediately after his graduation and completed the apprentice course of the company in January, 1901. The next two years he was located in the engineering department. In 1903 he was transferred to the British Westinghouse Co. and spent five years in London, England. In 1908, Mr. Gilman was recalled to East Pittsburgh and assigned to special duties in the power engineering department. He was in this department continuously until the time of his death.

Mr. Gilman leaves his widow, Aimmie Gilman, of Palo Alto, Calif.

NAMES CONTINENTAL AS SOLE DISTRIBUTOR

The Continental Supply Co. is to be the sole distributor to the oil industry of Gardner oil pumps, according to arrangements completed recently.

The Gardner Governor Co. makes a complete line of pumps for use in the petroleum industry, including slush pumps for rotary drilling, pipe line pumps for low and high pressures, boiler feet and tank pumps and blender pumps for refineries.

The company's factory at Quincy, Ill., is one of the largest in the world devoted to the manufacture of pumps, governors and compressors and the business of the Gardner Company dates back more than 60 years.

DEMAND FOR OIL COUNTRY GOODS EXPECTED TO OPEN UP IN SPRING

PITTSBURGH, Pa., Dec. 31.—The steel industry has had a remarkably good year in point of tonnage production and demand, but only a fair year in point of profits.

Production of steel ingots, the basic material for rolled steel products, was a trifle over 43,000,000 gross tons, falling short of the record, made in 1917, by a few hundred thousand tons, and being otherwise the best year's output on record. As the war is ended, the natural comparison is with post war times. The first four post war years showed an average ingot production of 32,000,000 tons, with wide variations since 1920 ran above 40,000,000 tons and 1921 under 20,000,000 tons. The fifth year, now ended, betters the four-year average by 35 per cent. The production was only between 80 and 85 per cent of estimated capacity, but as the capacity is largely a creation of the war it is simply an incident. The country was busily at work all year, and did approximately as well as it could in consuming steel.

All the business forecasts of the past fortnight have been very sanguine, promising good times for 1924, but it should be noted that the future of business cannot be seen farther ahead in December than in other months of the year, and 12 months is farther ahead than it is usually safe to predict.

In steel the important thing is that the new year is entered under fairly favorable auspices as to tonnage demand, while on account of prices having been maintained, with trifling exceptions, at the advanced level attained last April the mills stand to receive full prices on their shipments, whereas much of the tonnage shipped in 1923 was against old sales, made before the higher prices were reached. Thus there are larger profits in prospect for 1924 as compared with 1923, provided prices continue to be maintained and the tonnage is called for.

In many quarters steel prices were expected to begin declining before this. Instead, prices are better held than a month ago. Bars, shapes, plates, pipe, wire products and tin plate have been quite well held right along, but shading in sheets appeared last August and grew more pronounced until late in November, since when there has been a firming up, and in the past week the shading has almost entirely disappeared, making the sheet market now quotable at its old level. The automobile trade in particular made strong efforts to reduce the sheet market, but after making some purchases at concessions, is now paying full prices and buying quite freely, though only for early deliveries.

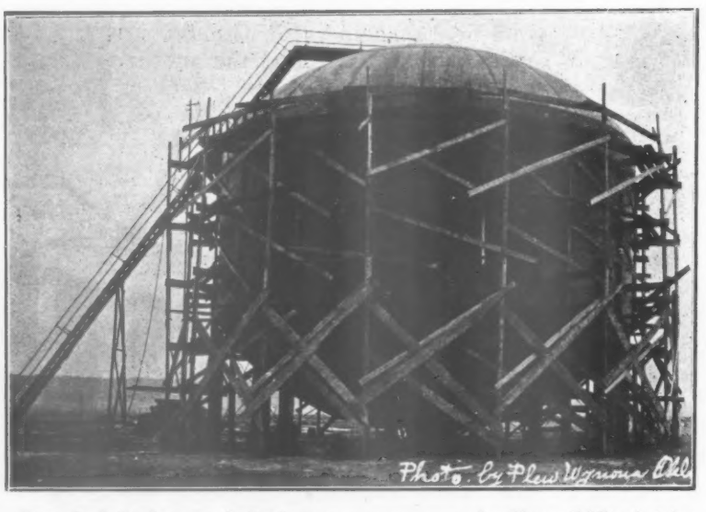
Prices of merchant pipe and oil country tubular goods have not been open to question at any time, being readily held. In the past week the National Tube Co. has had its lap weld furnaces closed, with most of its butt weld furnaces continuing in operation, while it operated its blast furnaces and steel making units as formerly. In the fore part of the month the company operated at approximately 90 per cent of capacity, and substantially this rate is likely to be regained. Independent pipe mills have been operating at various rates from 65 to 85 per cent.

As jobbers' stocks are very low, buying of merchant pipe is expected to increase in the new year, with inventories out of the way. Demand for oil country goods continues light, but is expected to open up well by early spring. Pipe mills estimate roughly that taking 1924 as a whole, there is likely to be as heavy tonnage of oil country goods as there has been in 1924, which has been a fair but not a particularly good year in that line.

There is no interest in oil storage tanks, except for an occasional small order.

Tin plate buying is light, with mills running very well and either comfortably or well sold for the early months of the new year.

ERECTING TANKS TO STORE GASOLINE



Several of the large casinghead gasoline manufacturers are considering at this time the erection of storage tanks of the vapor pressure type as it has been proved economical to store gasoline over the winter period, due to the higher prices obtainable for it in the summer. In normal times, it is often possible to effect a saving in one year equal to the entire cost of the tank, according to Charles Marner of the Graver Corp., builders of the 10,000-bbl. pressure tank shown in the accompanying picture.

This tank was constructed by the Graver Corp. for the Skelly Oil Co., at Wynona, Okla., and is one of six that have been erected in Oklahoma. Five others of similar type are now under construction.

The dimensions of these tanks are about 50 feet each way, giving them the appearance, when the scaffolding is taken away, of large balloons anchored to the prairie. They are constructed with the utmost care, all holes in the plates being sub-punched at the shop and reamed to correct size on the ground. All seams in the bottom and vertical side plates are triple-riveted, while those in the top of the tank are double-riveted, and to insure absolute tightness, they are all calked both inside and out.

Due to this extraordinary amount of riveting and to other unusual features of construction, the field erection cost of one of these 10,000-bbl. pressure tanks is as great as that of a steel-roofed 55,000-bbl. storage tank. The total cost is around $23,000.

The tanks are built to stand a working pressure of 10 pounds per square inch, and are tested under a pressure of 18 pounds.

KINGWOOD TO HAVE 80,000-BARREL TANK

The erection of an 80,000-bbl. steel storage tank to be constructed in Okfuskee County, Oklahoma, near the Kingwood pump station, has been announced by the Empire Pipe Line Co. Construction work on this tank will start as soon as material can be assembled. The tank will be equipped with a water seal roof, a type of covering said to be every effective in preventing evaporation loss and in reducing fire hazard. This is the first tank of 80,000-bbl. capacity to be built by the Empire Refineries, Inc. Erection of steel storage heretofore has been confined to tanks of 55,000-bbl. capacity as the maximum. The use of a larger tank, however, gives a somewhat lower construction cost per barrel.

Erection of this tank is under supervision of the engineering and construction department, Empire Companies.

COMPRESSED AIR STANDARDS

A pamphlet entitled "Trade Standards Adopted by the Compressed Air Society" has just been published, embodying the result of extended study and research on the part of the executives and engineers associated with the members of that organization. It embraces the nomenclature and terminology relating to air compressors and their operations; a history of the development of speeds of air compressors; an explanation of capacities and pressures; instructions for the installation and care of air compressors with illustrations of devices suggested for cleaning the intake air; recommendations for the lubrication of air compressing machines and the cleaning of air receiver piping; a description of the low pressure nozzle test recommended by the society, and a partial list of applications of compressed air.

Copies may be had by addressing the secretary of the society, C. H. Rohrbuck, 50 Church Street, New York.

AN ATTRACTIVE CALENDAR

An unusually attractive and useful calendar is the medium through which the Link Belt Co., of Chicago, sends to the trade the compliments of the season and its best wishes for the success and prosperity of its friends through the coming year.

Bridgeport Rental Service

has saved Large and Small Operators Thousands of Dollars

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Florence, Kansas
Augusta, Kansas
El Dorado, Kansas
Madison, Kansas
Marietta, Ohio

NORTH CENTRAL TEXAS

(Continued from Page 44)

sand at 1,600 feet; No. 3 Wilson, drilling at 1,405 feet; Kentucky Oil Corp.'s No. 3 Wilson, at 1,155 feet; Lynch and others' No. 1 Birdwell has water trouble at 1,320 feet; Maer and others' No. 2 Wilson, drilling in soft rock at 605 feet; Morris and others' No. 2 Wilson, drilling in blue shale at 1,355 feet; Moore and others' No. 1 Wilson, bailing a sand showing salt water at 1,600 feet; Pace and others' No. 1 Ford, drilling at 1,525 feet; Perkins and others' No. 1 Parrish, at 1,405 feet; Riner and others' No. 2 Wilson, plugging back to test an oil sand at 1,614 feet; R. M. F. Oil Co.'s No. 2 Egbert, will pump and test a sand at 1,600 feet; No. 1 Wilson, bailing an oil sand at 1,595 feet; Sampley and others' No. 1 Miller, running 6⅝-inch casing, have a broken sand showing some oil at 1,340 feet; Shamrock Oil Co.'s No. 4 Richardson, bailing and testing a sand at 1,360 feet; No. 1-B Wilson, setting 6⅝-inch casing on top of a water sand at 1,300 feet; Sibley and others' No. 7 Wilmot, drilling at 1,200 feet; 66 Oil Co.'s No. 6-B Wilson, fishing for a swab, sand at 1,590 feet, showing oil; Staley and others' No. 1 Nichols, drilling at 1,405 feet; Sun Oil Co.'s No. 3 Farmer, drilling in brown shale at 1,445 feet; Sunshine State Oil & Refining Co.'s No. 14 Carter Bros., drilling at 1,205 feet; No. 2 Parrish, drilling in blue shale at 1,315 feet; Thomas and others' No. 1 Ford, drilling in soft rock at 1,780 feet; Underwood Drilling Co.'s No. 4 Wilmot, drilling at 155 feet; No. 1 Wilson, testing a sand showing some oil at 1,600 feet; Dr. Wallace's No. 16 K. & K., ratholing at 1,752 feet; While Oil Corp.'s No. 1 Wilson, drilling at 1,325 feet.

Young County

Completions—Snowden & McSweeney's No. 1 Carter, dry at 1,868 feet.

Drilling—Bullington and others' No. 1 Campbell, drilling at 400 feet; Byrens and others' No. 1 Mahoney, cleaning out at 3,933 feet; Calmo Oil Co.'s No. 1 Hinson, spudding; Gulf Production Co.'s No. 1-A Hockaday, preparing to swab a lime formation at 4,109 feet; Harrown and others' No. 1 Vick, drilling at 1,085 feet; Logan and others' No. 1 Wild, drilling in shale at 815 feet; McGuire and others' No. 1 Carter, fishing for casing at 1,875 feet; McKenzie and others' No. 1 Logan, drilling at 800 feet; Mann and others' No. 5 Whittenburg, shot a sand with 40 quarts at 1,870 feet, responded with an estimated production of 15 bbls. daily; Mid-Kansas Oil & Gas Co.'s No. 1 Gibson, underreaming at 3,750 feet; No. 1 Moren, fishing for casing at 1,865 feet; Nash and others' No. 1 Bower, drilling at 845 feet; No. 1-B Williams, show of oil from a sand at 2,435 feet; North American Refining Co.'s No. 1-B Scott, fishing job at 3,800 feet; Peter and others' No. 1 Boley, fishing for tools at 300 feet; Seaboard Oil Co.'s No. 4 Hughes, drilling at 1,715 feet; Shamrock Oil Co.'s No. 3-A Bower, drilling in lime at 1,800 feet; Standard Petroleum Co.'s No. 1 McBrayer, drilling without any showing at 4,095 feet; Weekley and others' No. 3 McLaren, preparing to plug at 2,630 feet; Whitehead and others' No. 1 Graham, drilling at 1,635 feet; No. 1 Johnson, fishing for casing at 4,220 feet.

Stephens County

Completions—Mid-Kansas Oil & Gas Co.'s No. 2 Couger, 100 bbls. at 3,270 feet; same company's No. 2 Hill, 55 bbls. at 3,180 feet; McLain and others' No. 1 Hill, dry at 3,910 feet; Price and others' No. 2 Bruce, 300 bbls. at 2,085 feet; Qualey and others' No. 1 Bradford, dry at 2,150 feet; Texas Pacific Coal & Oil Co.'s No. 1 Lee, dry at 2,025 feet.

Drilling—North American Oil & Refining Co.'s No. 2 Corbett, spudding; Rochelle and others' No. 1-A Sweeney, drilling at 780 feet; Curry Pool Oil Co.'s No. 1 Thompson, at 1,200 feet; Fidelity Oil Co.'s No. 1 Parks, at 515 feet; Haile and others' No. 1-B Jones, drilling in brown shale at 965 feet; Magnolia Petroleum Co.'s No. 4 Brown, drilling with a hole full of water at 3,440 feet; Mahlstedt & Mook Oil Co.'s No. 1 Boyett, pulling big pipe at 3,420 feet; Rosser and Pendleton's No. 5 Jones, running 8-inch casing at 2,330 feet; Scott and others' No. 2 Davis, drilling at 1,450 feet; Sinclair Oil & Gas Co.'s No. 5 Henderson, drilling in hard rock at 2,500 feet; Swensondale Oil Co.'s No. 1 Harrington, drilling at 1,100 feet; No. 19 Swenson, drilling in blue shale at 2,350 feet; Texas Pacific C. & O. Co.'s No. 3 Ashmore, fishing for casing at 2,170 feet.

Eastland County

Completions—Panhandle Refining Co.'s No. 7 Hightower, 30 bbls. at 1,215 feet; Rosenfield and others' No. 1 Gilbert, 15 bbls. at 515 feet.

Drilling—Ablon and others' No. 1 Collins, shot with 120 quarts with no results at 3,040 feet; Donnelly Bros. No. 1 Brelsford, drilling in brown shale at 1,155 feet; Knox-Lewis Oil Co.'s No. 2 Edison, drilling at 2,600 feet; Magnolia Petroleum Co.'s No. 4 Ross, drilling at 1,940 feet; McLester and others' No. 2 Westmoreland, underreaming at 1,100 feet; Ocheltree and others' No. 1 Webb, picked up a sand showing some oil but will drill deeper at 1,313 feet; Panhandle Oil & Refining Co.'s No. 8 Hightower, drilling at 405 feet; Root and others' No. 4 Bond, sand showing some oil at 3,600 feet; States Oil Corp.'s No. 4 Qualls, pulling 6-inch pipe to drill deeper at 1,900 feet; The Texas Co.'s No. 3 Hightower, drilling at 240 feet; Turner and others' No. 1 Steele, drilling in soft lime at 3,135 feet; Atlantic Oil Production Co.'s No. 11 Fields, drilling in brown shale at 1,100 feet; Daugherty and others' No. 1 Johnson, underreaming casing at 1,720 feet; Humble Oil & Refining Co.'s No. 1 Lainer, drilling at 1,500 feet; Mahew and others' No. 1 Luse, drilling in hard shale at 3,050 feet; Prairie Oil & Gas Co.'s No. 5-A Brooks, drilling at 2,400 feet; Root and others' No. 4 Carter, drilling with a show of gas at 3,545 feet; No. 1 Walker, will shoot a lime formation at 3,550 feet; Texas Development Co.'s No. 1 Lewis, drilling in the Caddo lime at 3,200 feet; Turner and others' No. 1 Rio Bravo, drilling in blue shale at 2,575 feet.

Wildcats

Shackelford County: Completions—Slough and others' No. 1 Perry, dry at 2,210 feet.

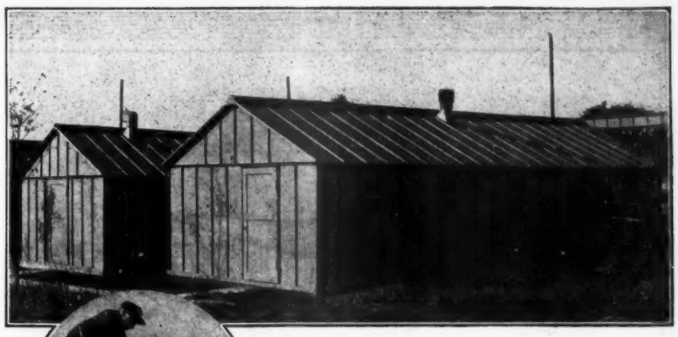
Drilling—Connelly and others' No. 1 Parrish, running 12½-inch casing at 700 feet; Humble Oil & Refining Co.'s No. 1 Jackson, showing 1,000,000 feet of gas and drilling at 3,365 feet; No. 1-E Poindexter, showing gas and drilling at 2,530 feet; Landreth Oil Co.'s No. 2 Brazelle, showing gas and drilling at 3,460 feet; No. 14 Poindexter, drilling at 2,470 feet; Texhoma Oil & Refining Co.'s No. 2 Blach, underreaming 6-inch casing at 2,700 feet.

Palo Pinto County: Completions—Gibson and others' No. 1 Holt, dry at 4,260 feet.

Drilling — Texas Pacific Coal & Oil Co.'s No. 1 Robinson, drilling by tools at 3,585 feet; No. 144 Stuart, fishing for casing at 1,695 feet; Costello and others' No. 1 Costello shot twice, estimated 10 bbls. production at 2,500 feet; Hess and others' No. 1 Coker, drilling at 800 feet; Jones and others' No. 1 Jones, drilling in lime at 3,420 feet; Hinson and others' No. 2 Finch, plugging to shoot at 4,150 feet; Simms Oil Co.'s No. 1 Costello, sidereaming 6-inch casing at 3,820 feet; Singleton and others' No. 1 Holt, drilling at 3,110 feet.

Mitchell County: Drilling—Carey and others' No. 1 Morrison, is timbers; Sloan and others' No. 2 Smart, drilling at 3,375 feet; California Co.'s No. 1 Morrison, waiting on cement to set at 3,925 feet; Nos. 2 Morrison and 1 Butler, spudding; No. 2 Miller, drilling at 345 feet; No. 1 Morrison-Reilly, cleaning out after a shot at 3,030 feet.

Callahan County: Drilling — Junior Oil Co.'s No. 1 Thorn, drilling at 1,805 feet; Moore and others' No. 1 Ackers, drilling at 1,280 feet; Schaffner and others' No. 1 Jones, drilling in a sand at 2,420 feet; Stein and others' No. 1



Two supply houses in the Caddo fields. First is size 16' 10½"x30' 2"; second: 16' 10½"x39' 4".

Here is the Ideal Building For Oil Fields

This insert shows a Swartwout roof section being placed. The patented joint and the accurately manufactured standard sizes facilitate the erection of the building. It goes together so easily and quickly that one man and a helper can erect a Swartwout complete in one day.

The patented Swartwout Interlocking Joint has revolutionized metal building construction. It fastens itself, forms its own strong superstructure, and makes a continuous weatherproof partition.

Swartwout Metal Buildings are unusually practical for general shelter purposes in the oil fields. They are strong, light, easily and quickly erected, weatherproof, fire- and rust-resisting.

The skillful design of the patented Swartwout interlocking joint affords many advantages. Because of it, two men can erect an average sized building in a day. The curved joint adds the rigidity of an I beam to the structure. The sections, in locking together, form a weatherproof joint.

Swartwout metal buildings are easily taken down for erection in a new location. They may be added to, as all sections are of standard make.

And Swartwout Metal Buildings are economical. Use them for warehouses, derrick and pump houses, garages, tank or bulk stations, tool and supply houses, bunk houses, etc.

Write for the Swartwout Metal Building Book TODAY!

The Swartwout Company
Cleveland, Ohio

Swartwout Metal Buildings

"With the interlocking joints"

17

MADE OF KEYSTONE COPPER STEEL

1888 1924

The PENDULUM

is already swinging back. The outlook is very promising for a business year of exceptional opportunities.

We want to take this occasion to wish our friends and patrons their full quota of health, happiness and prosperity in

1924

MALONEY TANK MFG. CO.
TULSA, OKLA.

MALONEY PATENTED BOLTED COPPER-STEEL TANKS

MALONEY

Barr, showing 1,000,000 feet of gas at 1,423 feet.

Clay County: Completions—Lone Star Gas Co.'s No. 9 Skelly, 9,000,000 feet of gas at 1,388 feet; No. 7 Panhandle, 3,000,000 feet of gas at 1,730 feet.

Drilling—Crude Oil Production Co.'s No. 1 Kinder, drilling in shale at 1,100 feet; Gulf Production Co.'s No. 1-A Boddy, fishing for 4 joints of casing at 2,790 feet; No. 3 Worsham, setting 12½-inch casing at 775 feet; Lone Star Gas Co.'s No. 1 Martin, drilling at 105 feet; Nebraska Oil & Gas Co.'s No. 1 Meyers, drilling in rock at 3,295 feet.

Jack County: Completions — Duncan and others' No. 1 Woodward, dry at 1,305 feet.

Knox County: Drilling—Brazos Bend Oil Co.'s No. 1 Clarke, drilling at 1,865 feet.

Montague County: Drilling — The Texas Co.'s No. 1 Ruckpashel, swaging 12½-inch casing at 210 feet; Amerada Oil Corp.'s No. 1-A Beasley, fishing at 3,030 feet; Gulf Production Co.'s No. 1 Benton, drilling in soft rock at 2,915 feet; Mascho Oil Co.'s No. 1 Howard, drilling in blue shale at 2,185 feet.

Throckmorton County: Drilling—Ashcroft and others' No. 1 Polk, drilling at 1,045 feet; Richardson and others' No. 1 Reynolds, show of oil and gas from a sand at 940 feet.

Wilbarger County: Drilling—Adams and others' No. 1 Waggoner, drilling in hard lime at 1,565 feet; Byrne and others' No. 1 Corder, preparing to abandon at 2,150 feet; Robinson and others' No. 1 McCaleb, running 6⅝-inch casing with a new casing shoe at 2,104 feet; Noble Oil Co.'s No. 1 Waggoner, drilling at 1,030 feet; South Vernon Oil Co.'s No. 1 Stephens, flowed about 12 bbls. of oil from a sand at 965 feet, and drilling at 1,500 feet.

Armstrong County: Drilling—Magnolia Petroleum Co.'s No. 1 J. A. Ranch, drilling in hard lime at 3,665 feet.

Carson County: Drilling—The Texas Co.'s No. 3 Burnett, drilling in salt rock at 1,310 feet; Humphreys Oil Co.'s No. 1 Sandford, fishing for a string of tools at 2,530 feet; Silk and others' No. 3 Burnett, drilling in red beds at 1,765 feet.

Gray County: Drilling — The Texas Co.'s No. 1 Saunders, drilling in lime at 2,375 feet; Holmes and others' No. 1 Morris, underreaming 12½-inch casing at 900 feet.

Hutchinson County: Drilling—Humphreys Oil Co.'s No. 1 Johnson, drilling by a bit at 2,585 feet; Montgomery and others' No. 1 Johnson, underreaming 10-inch casing at 1,760 feet; McGee and others' No. 1 Smith Capers, cleaning out at 3,175 feet; Producers and Refiners Corp.'s No. 1-B Bivens, drilling in red beds at 1,355 feet.

Potter County: Drilling — Producers & Refiners' Corp.'s No. 2 Masterson, shooting rhyolite rock at 2,970 feet; No. 1-A Bivens, drilling a cave at 2,775 feet; No. 2-A Bivens, drilling in red beds and gyp at 1,260 feet.

Wheeler County: Drilling—Skelly Oil Co.'s No. 1 Davis, drilling in blue shale at 2,690 feet; Tyrell and others' No. 1 Sheldon, showing gas at 1,260 feet, and underreaming 10-inch casing with the hole caving at 1,290 feet.

PRODUCTION REPORT

Week Ending December 27, 1923

Burkburnett

American Refining Co.	285
Barkley & Meadows	1,925
Humble Oil & Ref. Co.	665
Gulf Production Co.	1,765
Magnolia Petroleum Co.	3,610
Middle States Oil Corp.	150
McMahon Oil Co.	525
Panhandle Refining Co.	490
Sinclair Oil & Gas Co.	55
The Texas Co.	755
Texhoma Oil & Ref. Co.	585
Miscellaneous	11,500
Total	22,310

Electra

Empire Gas & Fuel Co.	1,575
Humble Oil & Ref. Co.	130
Griswold Oil Co.	450
Gulf Production Co.	940
Magnolia Petroleum Co.	4,900
Middle States Oil Co.	150
McMahon Oil Co.	305
The Texas Co.	4,965
Texhoma Oil & Ref. Co.	2,445
Miscellaneous	2,570
Total	18,330

Iowa Park, Etc.

American Refining Co.	
Griswold Oil Co.	60
Gulf Production Co.	90
Middle States Oil Co.	60
Texhoma Oil & Ref. Co.	5
Miscellaneous	20
	2,130
Archer County—	
American Refining Co.	340
Griswold Oil Co.	415
Gulf Production Co.	340
Humble Oil & Ref. Co.	100
The Texas Co.	880
Texhoma Oil & Ref. Co.	2,135
Miscellaneous	10,000
Petrolia—	
Gulf Production Co.	110
Magnolia Petroleum Co.	50
The Texas Co.	90
Miscellaneous	100
Total	13,900

Stephens County

Empire Gas & Fuel Co.	100
Gulf Production Co.	1,595
Humble Oil & Ref. Co.	1,870
Magnolia Petroleum Co.	925
Mid-Kansas Oil & Gas Co.	1,705
Prairie Oil & Gas Co.	1,235
Sinclair Oil Co.	350
The Sun Co.	840
The Texas Co.	2,715
T. & P. Coal & Oil Co.	1,320
Miscellaneous	10,120
Total	22,715

Eastland County

Gulf Production Co.	640
Humble Oil & Ref. Co.	155
Magnolia Petroleum Co.	535
Panhandle Refining Co.	490
Prairie Oil & Gas Co.	910
Sinclair Oil Co.	610
The Texas Co.	200
T. & P. Coal & Oil Co.	1,090
Miscellaneous	2,570
Total	7,300

Other Fields

Strawn—	
T. & P. Coal & Oil Co.	300
Miscellaneous	665
Moran—	
Empire Gas & Fuel Co.	190
Humble Oil & Ref. Co.	600
The Texas Co.	145
Texhoma Oil & Ref. Co.	215
Miscellaneous	2,560
Coleman County—	
Miscellaneous	100
Brown County—	
Miscellaneous	215
Comanche-Eastland—	
Humble Oil & Ref. Co.	495
Magnolia Petroleum Co.	1,190
Prairie Oil & Gas Co.	325
Sinclair Oil & Gas Co.	75
The Texas Co.	335
T. & P. Coal & Oil Co.	630
Miscellaneous	4,770
Young County—	
Gulf Production Co.	165
North American Ref. Co.	115
Sinclair Oil & Gas Co.	515
Oklahoma Petroleum & Gas Co.	95
The Sun Co.	35
Panhandle Refining Co.	375
The Texas Co.	140
Miscellaneous	5,075
Mitchell County	850
Reagan County	150
Jack County	90
Total	17,170
Total all fields	110,210
Total last week	113,110
Loss	1,900

CALIFORNIA FIELDS

(Continued from Page 46)

The Pugh-Miller Drilling Co. completed H. H. Patton's No. 2 with a 6⅛-inch oil string landed on bottom after drilling it to 3,747 feet, and presented him with a nice well. Patton's new producer was brought in doing 1,125 bbls. a day of 25.6 gravity oil, which showed a cut of 2 per cent. It is flowing through a ⅝-inch bean under a pressure of 410 pounds.

Smaller Producers

During the current week the Rice Petroleum Co. secured its first producer at Torrance, No. 1 Lomita, and brought in a 750-bbl. well. It was drilled to 3,735 feet and the output, testing 24.0 degrees and showing a cut of 1 per cent, is flowing through a ½-inch bean under a pressure of 380 pounds. The company has a rig up for No. 2 and the crew, which just successfully completed No. 1, will start work on it within the next few days.

When the Gilmore Oil Co. completed No. 1 Leake several months ago as a small well at 3,658 feet it was not satisfied with the outcome and it was killed soon after being brought in. The well has since been redrilled and deepened from 3,658 to 3,775 feet, but the additional hole added only resulted in a slight increase in production. Number 1 Leake did not have sufficient kick to flow and, upon being put on the beam a few days ago, pumped a little less than 300 bbls. during the first 24 hours. The well cu-

STEEL SUPERIOR DERRICK

One of the Distinctive Features of Superior Steel Derricks

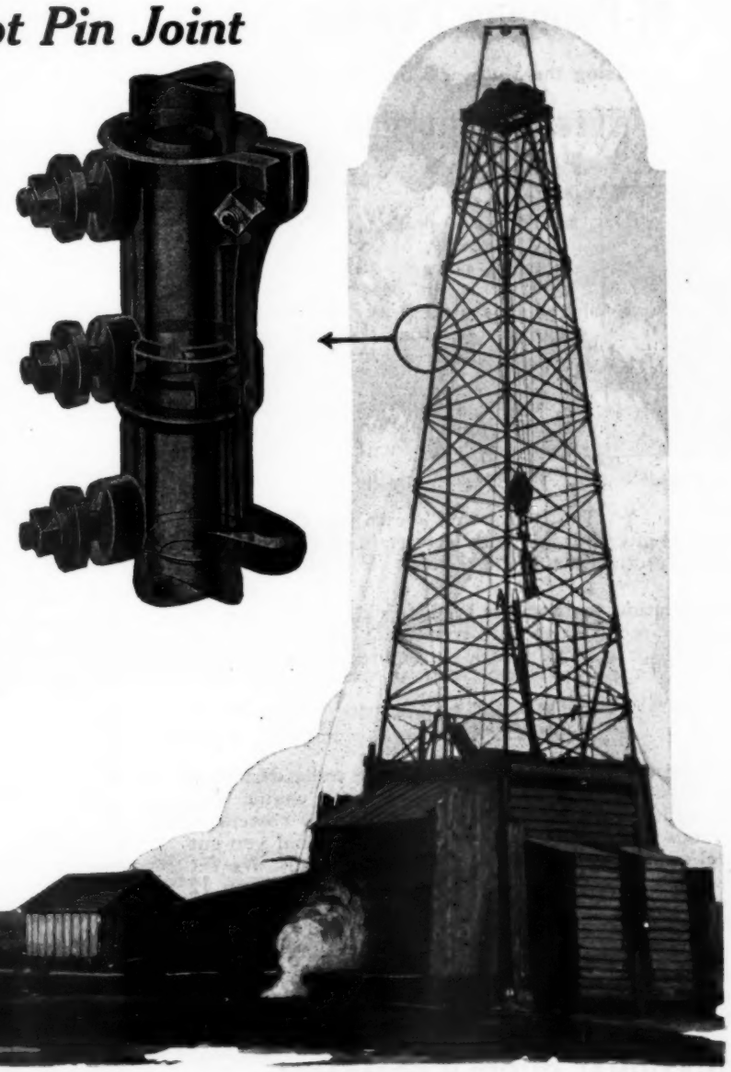
The Sleeve and Pilot Pin Joint

The joint is made up of a heavy steel sleeve casting which is permanently attached to the upper end of the leg section and a steel pilot pin casting which is pressed into the lower end of each leg section.

Both of these castings are designed with two lugs at the center, the lugs on the pilot pin fitting in between the lugs on the inside of the sleeve casting. Thus the ends of each section of pipe are reinforced both inside and outside, precluding any possibility of crushing or fracture of the pipe at the ends.

The locking feature obtained by the combination of lugs on the pilot pin and in the sleeve prevents the twisting of the leg members at the joints, and also insures perfect alignment of the leg sections.

The joint is stronger than the pipe from which the legs are made and any possibility of bending is therefore eliminated.



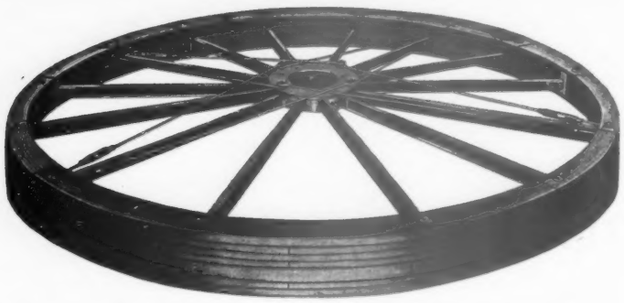
Ask the driller who has used one.

SUPERIOR TUBE COMPANY

STEEL DERRICKS—CASING—TUBING—LINE PIPE

Kansas City, Mo.

Pittsburgh Tulsa St. Louis Dallas Casper



Durnell Talks on Standardization of Pumping Powers

Being the Sixth of a Series

Wheel Construction

H. G. Durnell

Our wheel construction shown above is patterned after the old-fashioned horse power, the sweeps acting as spokes to carry the rim and transmit power to the hub and eccentrics at the center of the wheel. The spokes are heavy Standard Channels braced from the Hub, and the rim is built of a Wood Cants.

Belting Manufacturers recommend that "Bandwheel Pumping Power rims should be lagged with a suitable wood lagging."

It is a well known fact that a wood rim gives a greater traction with less strain on the belt than if built of any other material.

Standardization again enters here, as well as flexibility of equipment for requirements are contingent to necessity and either a 12 ft. or a 24 ft. wheel, as required above, may be furnished.

Example

A customer recently said, "We have five wells which we must run 30 strokes per minute, and have a gas engine with a 24-inch pulley. We have one of your Durnell Powers in the warehouse; the wheel is 16 ft. diameter; could you cut this wheel down without much expense?" We did. We cut the spokes and sawed the 12 ft. cants and made them a 12 ft. power. Result, wells run 30, and engine 180 R. P. M., plenty of belt pulley surface, and belt traction.

This Bandwheel with its adaptable design and construction gives to the Durnell Underpull Power a feature that is positive insurance for efficiency and economy.

INTERNATIONAL SUPPLY COMPANY, Agents

STOCKS AT

OKLAHOMA		KANSAS	WYOMING
Okemah	Jennings	El Dorado	Casper
Okmulgee	Shidler	Madison	
Bristow	Tonkawa	Virgil	
Bryant	Bartlesville		
Wewoka	Pawhuska		MONTANA
	Drumright		Sunburst

MANUFACTURED BY

UNION MACHINE COMPANY

BARTLESVILLE, OKLA.

not safely be drilled any deeper without encountering bottom water and this will, therefore, probably be its maximum production. The company's No. 2 is drilling ahead in a hard sandy shale at 2,660 feet and another small well will probably be brought in around the 3,700-foot level.

There were no completions in the extreme south end of the field, the Shell's No. 1 Keystone, which will either define or extend the limits of this area, remaining cemented during this period. The greatest amount of new activity in the field is centering in the immediate vicinity of the Standard's No. 1 Dominguez and the Sentinel's No. 1 Joughin, but should the Shell's No. 1 Keystone be completed, many additional derricks will rise in the intervening territory. The Standard's No. 1 Dominguez, completed a few weeks ago as a 610-bbl. well, had settled down during the early part of the week to 500 bbls. a day. The company was running the production from this well into tanks over 200 yards away, which, for some reason or other, seemed to retard the output. The well was turned loose into the sump and this shortening of the lead pipe has resulted in an increase in production of 300 bbls., the present output being around 800 bbls. daily.

The North American Consolidated Oil Co.'s No. 1 Oakley, approximately 1 mile east of the Sentinel Oil Co.'s No. 1 Joughin, was the center of interest during the week because of the announcement by the company that it had extracted favorable cores from it. The North American is landing a string of 10-inch at 3,500 feet in the Oakley well, 50 feet shallower than the depth at which the Standard's No. 1 Dominguez was cemented, and 128 feet higher than the depth at which the 10-inch was landed in the Sentinel's No. 1 Joughin. The well has been drilled and cored to 3,792 feet and, while the showings in this extreme southeastern well have been rated only as fair, there is a strong possibility that the company may secure commercial production. The last producer brought in was well No. 2 of the Securities Syndicate. It was drilled by the Bush Drilling Co. to 3,777 feet and when turned loose put 800 bbls. of 25.7 gravity oil into the tanks during the first day. It was finished with a 3-inch oil string landed at 3,683 feet.

Long Beach

The Shell Oil Co., in addition to putting three wells on production with an aggregate initial output of 4,842 bbls., completed the largest new well at Long Beach during the week. The Shell's No. 5 Cresson Community, drilled to 5,005 feet, was the field's biggest well, its initial output being 2,630 bbls. The output from this new producer, which tests 30.4 degrees and shows a cut of 2 per cent, is flowing through a 7/8-inch bean under a pressure of 675 pounds. The Shell's two remaining wells were No. 4-A Nesa, drilled to 5,004 feet, and No. 3 Babb, finished at 4,350 feet. The latter is a recompletion after being cleaned out. No additional hole was made but the operation resulted in No. 3 Babb being returned to production doing 762 bbls. a day. It, too, is flowing through a 7/8-inch bean, the output testing 26.8 degrees and showing a cut of 6 per cent. No. 4-A Nesa was a new well and when put on production early in the week it made 1,450 bbls. during its first 24-hour production test. It is flowing through a 3/4-inch bean under a pressure of 760 pounds, the oil testing 26.8 degrees and showing a cut of 10 per cent.

With the exception of the Shell's No. 5 Cresson, the best well put on production stands to the credit of the Union Oil Co., although the Pan-American Petroleum Co.'s No. 5 Union Pacific was only slightly smaller. Both of these latter wells required several days of bailing and swabbing before responding, the gas pressure apparently being too low to raise the column of mud, water and oil. Although both turned out to be good producers, they show very clearly that the gas head in the field is passing off and that it will be but a short time until the pressure will be insufficient for the completion of large wells from the 5,000-foot level. The Union's new producer, No. 10 Long Beach Community, was finished with a 6¼-inch oil string landed on bottom at 4,983 feet and came in doing 1,850 bbls. of 31.7 gravity oil. It is flowing through a 1¾-inch bean under a pressure of 470 pounds. Number 10 Long Beach Community, in addition to being a substantial well, is producing the highest gravity oil in the field. The output, however, is showing a cut of about 5 per cent. The company's No. 11, which resulted in a gas blowout of several days' duration a few months ago when the bit penetrated a gas pocket around the 2,000-foot level, is held up with a fishing job at 2,703 feet. This well is being drilled under contract and the drilling company doing the work has encountered an unusual amount of hard luck. Over 300 feet of drill pipe are still in the hole and an attempt is being made at the present time to drill by the fish.

After Much Effort

The Pan-American Petroleum Co.'s well No. 5, located on the Union Pacific right of way, was drilled to 5,015 feet and responded to swabbing operations only after a good deal of effort had been expended. The company was well rewarded, however, for this extra work, as it came in flowing 1,800 bbls. a day. The output, testing 26.1 degrees and showing a cut of 2 per cent, is flowing through a 7/8-inch bean under a pressure of 400 pounds.

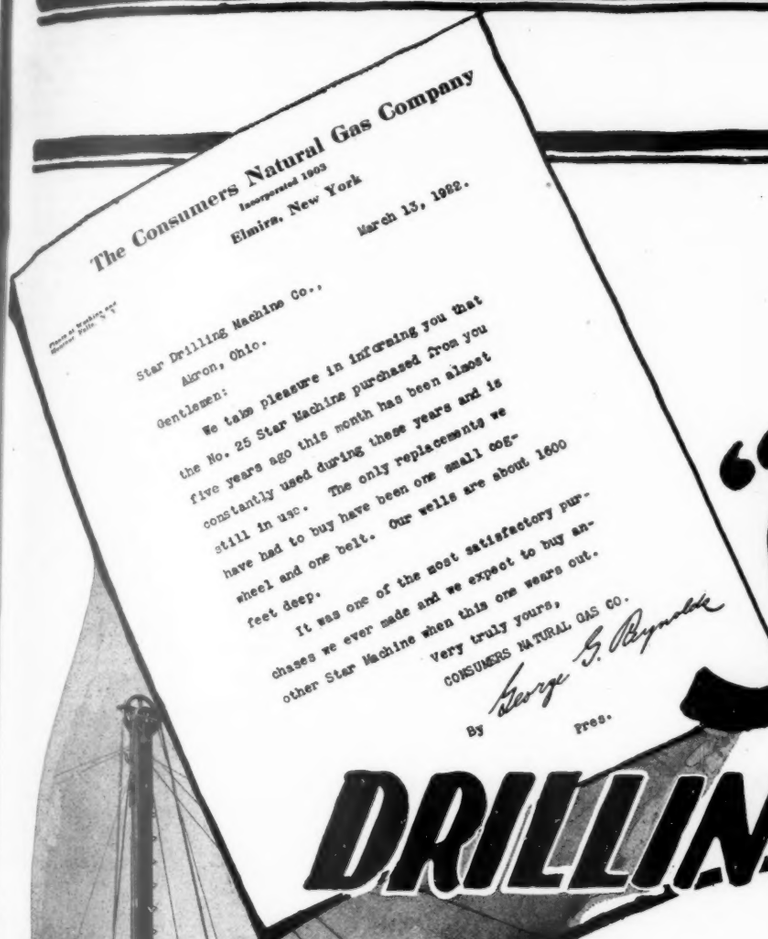
After a year's hard work, the Federal Drilling Co. has finally succeeded in putting the Anchor Oil Co.'s No. 1 Lightburn on production. During the course of drilling several fishing jobs developed and, after remaining idle for a few months, the company resumed work and finished it during the early part of the current week. No. 1 Lightburn was drilled to 4,697 feet and, although it flowed for the first few hours at the rate of 1,250 bbls. a day, the first 24 hours' production totaled 1,160 bbls. It was finished with a 6¼-inch oil string and the output, testing 24.2 degrees, is flowing through a 3/4-inch bean under a pressure of 283 pounds.

The Big Star Oil Co., and the Dabney Oil Syndicate each completed a well doing approximately 750 bbls. a day. The Big Star Oil Co.'s No. 1 Melachrino was drilled by the Hackworth Drilling Co. to 4,300 feet and put on production doing 743 bbls. of 25.1 gravity oil. It is flowing through a ½-inch bean under a pressure of 460 pounds. The Dabney Oil Syndicate put No. 13 Yochem on production after redrilling and deepening it from 3,406 feet to 5,329 feet. The additional amount of hole resulted in an increase in production, the present output being 759 bbls. a day of 22.1 gravity oil. The production has been showing a cut of approximately 10 per cent, but it is believed that the amount of foreign matter will be very substantially reduced after the well has cleaned itself out. The same company, after drilling its No. 2 to 5,390 feet and encountering bottom water, plugged it back to 5,330 feet and attempted to secure production from this depth. It did not result in commercial production, however, although the well is flowing by heads at the rate of about 30 bbls. a day.

Difficult Production

Davis & McMillan also had difficulty in securing production and, although their No. 6, drilled to 4,912 feet, made 500 bbls. of fluid on a production test, the well was wet and will require another cement job. The Gilmore Oil Co. was making a test at about the same time that Davis & McMillan were testing their No. 6 but it too was unsuccessful in securing a flow of clean oil. The Gilmore's No. 1 Smith tested wet at 4,307 feet and preparations were being made to recement within the next few days. The D. & H. Syndicate had a little better luck than either of these two companies and, although its No. 1, drilled to 4,591 feet, only pumped 200 bbls. a day of 25.2 gravity oil, the output was exceptionally clean.

The Black Gold Royalties also completed a 200-bbl. well, its No. 1, finished at 4,220 feet, pumping 196 bbls. of 22.8 gravity oil each day. The output is showing a cut of 2½ per cent. The Hink Oil Co. and the Progressive Oil Syndicate



The Consumers Natural Gas Company
Incorporated 1903
Elmira, New York

March 13, 1922.

Star Drilling Machine Co.,
Akron, Ohio.

Gentlemen:

We take pleasure in infroing you that the No. 25 Star Machine purchased from you five years ago this month has been almost constantly used during these years and is still in use. The only replacements we have had to buy have been one small cog-wheel and one belt. Our wells are about 1600 feet deep.

It was one of the most satisfactory purchases we ever made and we expect to buy another Star Machine when this one wears out.

Very truly yours,
CONSUMERS NATURAL GAS CO.
By George G. Reynolds Pres.

The "Star" DRILLING-MACHINE

FIELD PERFORMANCE—NOT CLAIMS—Is what counts in a Drilling Machine.

Every man whose duty it is to decide upon the type of Drilling Rig to buy must be guided either by his own experience or that of others in whom he has confidence.

Monthly, there will appear on this page a different letter from representative producers and contractors.

Profit by their experience: USE A STAR

The Star Drilling Machine Company,
Akron, Ohio

Branches: Chanute, Kan., Portland, Ore., Long Beach, Calif.
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We know that our wire lines are of first quality throughout because they are Wickwire Made from the mines to the finished product. They are constructed to withstand the most severe use and can be depended upon where there is a premium on speed and reliable service.

CARRIED AT THE FOLLOWING POINTS FOR THE PETROLEUM INDUSTRY

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Clarion County Machine Co., Knox, Pa.
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Lloyd Smith Co., Bradford, Pa.
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Murray Tool & Supply Co., Tulsa-Cleveland, Okla.

WICKWIRE SPENCER STEEL CORP.
41 East 42nd St., New York

each brought in a new well, the former's No. 1 Security being the largest. It was finished at 4,050 feet and registered an initial production of 500 bbls. The output, which tests 25.8 degrees, is clean. The Progressive Oil Syndicate's No. 1-A was completed at 4,020 feet and showed a maximum daily production of 350 bbls., the oil being clean and testing 26.1 degrees. One of the most interesting wells in the field is the Interstate Oil Co.'s No. 1 Peck, completed at 4,607 feet. The initial production of 472 bbls. shows a cut of 3 per cent and tests only 17.6 degrees. The low gravity of the oil is unusual from this depth and has created a good deal of comment. Notwithstanding a comparatively low output of heavy oil, however, the gas pressure is good, 490 pounds. The last well put on production during the week was the United Oil Co.'s No. 4 Denni, which was cleaned out and brought back pumping a little better than 200 bbls daily. The output coming from 3,705 feet is clean and tests 21.9 degrees.

Santa Fe Springs

There were 8 wells put on production at Santa Fe Springs, but probably the most important completion was the White Star Oil Co.'s No. 6, which was completed in the Bell zone at 3,860 feet. It was finished with a 4½-inch oil string landed on bottom and notwithstanding the fact that it was completed in the Bell zone, its initial production was larger than several of the completions in the deep Meyer zone. It came in doing slightly less than 500 bbls. a day of 31.2 gravity oil and, flowing through a ½-inch bean, shows a pressure of 300 pounds. The Mohawk Oil Co. also completed a well in the Bell zone, No. 4 Batson at 3,965 feet, but, after making 450 bbls. during the first 18 hours, it sanded up and will require a little more work before being finally listed as a successful producer. It was originally intended to finish this well at 3,895 feet in the hope of securing larger production, but a little more hole was added.

The Standard Oil Co. brought in three new wells with a total initial production of 645 bbls., but the Union Oil Co., with only two new wells, increased its production 2,225 bbls. The Standard's No. 1-A Sanchez, drilled to 4,731 feet, was perhaps one of the smallest wells ever completed in the Santa Fe Springs Field. The company has been working on this lease for over a year and this, the first completion, resulted in only a 45-bbl. pumper. Number 1-A Sanchez was a big disappointment and at the present price of oil would hardly pay to pump, but probably some time within the next two years it may be successfully pumped at a profit. The Standard had a little better luck with No. 9 Weisel, finished at 4,673 feet, and No. 6 Koontz, redrilled to 4,648 feet, although both of them were only comparatively small producers. Number 6 Koontz is making 350 bbls. a day of 30.9 gravity oil through a ½-inch bean under a pressure of 125 pounds, while No. 9 Weisel is doing 250 bbls. a day of 31.8 gravity oil through a ¾-inch bean under a pressure of 230 pounds.

Union's New Wells

The Union's two new wells were No. 23 Bell and No. 10 Farwell, the latter being much the larger. The former, completed at 4,660 feet, was brought in doing 675 bbls. a day, while the latter, No. 10 Farwell, drilled to 4,675 feet, was brought in doing 1,550 bbls. The output from No. 23 Bell, which tests 33.5 degrees and shows a cut of 5 per cent, is flowing through a 1-inch bean under a pressure of 250 pounds, while the production from No. 10 Farwell, which is clean and tests 34.4 degrees, is flowing through a 1½-inch bean under a pressure of 450 pounds.

Although the General Petroleum Co. completed only one well, No. 45 Santa Fe, the output was probably the cleanest of any of the completions recorded during the week. It was finished at 4,702 feet and brought in flowing 1,350 bbls. of clean 30.9 gravity oil. The last well put on production during the week was the Shell Oil Co.'s No. 3 Thompson, which was drilled to 4,650 feet. The daily output of 502 bbls. tests 34.3 degrees and shows a cut of 1 per cent. While there were a number of new wells brought in at Santa Fe Springs during the week, it is noted that the greater majority of them were comparatively small. There are several wells off production in the field which cannot be pumped from the Meyer zone, for several reasons. In a few cases the gas pressure is too strong to permit pumping.

Huntington Beach

Field operations at Huntington Beach were productive of four new wells with a total initial daily production of 913 bbls. The Petroleum Midway Co. headed the list with two new wells, No. 2 Brown and No. 2 Savage, neither of which, however, was a satisfactory completion. The former, No. 2 Brown, completed at 3,700 feet, resulted in a 450-bbl. well, 50 per cent of the output, however, being water. If the production of this well should clean up it would be a very satisfactory completion as it is flowing under an unusually high pressure, 800 pounds. No. 2 Savage, finished at 5,115 feet, was considerably deeper than No. 2 Brown, but was capable of pumping only 15 bbls. a day of fluid, 20 per cent of which was water. The Pacific Petroleum Corp.'s well No. 2, which is credited with an initial production of 375 bbls. a day, is best completion recorded. It was finished at 3,480 feet and, although it was necessary to put it on the pump, it was a much better well than the Petroleum Midway's No. 2 Brown, which came in flowing. The output from the Pacific Petroleum's No. 2 tests 22.9 degrees and shows a cut of one-half to 1 per cent. Number 2 O'Donnell of the Petroleum Co., was the last well brought in during the week and it was necessary to place it on the pump also. It was finished at 4,717 feet and is pumping 75 bbls. a day of 26.1 gravity oil with a cut of 2 per cent. Only a small amount of development work is being done in the field and during the coming week no unusual number of completions is expected. The Standard and the Union however, will both bring in new wells, the former's No. 21 on Lease A, and the latter's No. 13 Copeland being expected in at any time.

OIL CITY REFINERY SITUATION IMPROVED

OIL CITY, Pa., Dec. 28.—The refinery situation in northwestern Pennsylvania has improved considerably during the past week. Every petroleum product, including gasoline, is much higher in price and the outlook is for even higher quotations.

The prices of gasoline have gone up well. The demand is also holding up good with favorable weather in most of the marketing territory, while the refiners are holding their gasoline in most cases for higher prices.

Kerosene has also increased in value, although not at the same rate as the other products.

The big feature of the market during the past week was the vast improvement in cylinder stocks and other lubricating oils. Six hundred steam refined is much higher than it has been, the increase amounting to about 2 cents during the week. There is no large quantity of this product on the market and many of the big firms, including the Sun Oil Co., are reported to be placing large orders. Neutrals continue to be very firm. The improvement in bright stocks has not been quite as pronounced as in the case of others. Filtered stocks are also much better.

Fuel oil has improved considerably in price although the demand has been disappointing. However, it is expected that the consumption of this product will improve greatly when the mills, which are now closed for inventory, resume operations after the first of the year.

Wax is almost impossible to obtain in the local markets and the price is much better.

LARGEST DIESEL SHIP

The largest Diesel motor ship in the world will be the 20,000-ton twin screw liner ordered by the Union Castle Mail Steamship Co. for its South African mail service.

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WE use steel of special analysis, made to our own specification—based on our score and half years experience. We don't take the mill's word that the steel is right. In our own laboratories we test every length of rod for structure—for uniformity.

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Representatives Everywhere There's Oil

Toledo, Ohio

REFINING AND MARKETING SECTION

Galena Companies Enter Marketing End On Refined Products

NEW YORK, Dec. 29.—The Galena Signal Oil Companies, for many years among the largest refiners of lubricating oils in the United States, are planning to enter the marketing end of the oil business through their own bulk and filling stations, according to reports here. It is stated the companies at present are completing additions to their several refineries so they will manufacture gasoline, kerosene and other light oil products as well as lubricating oils. The Galena Signal Companies have refineries located at Franklin, Pa.; Parkersburg, W. Va.; Bayway, N. J.; Houston, Tex.; Richmond, Calif.; Toronto, Canada, and Rouen, France.

The operations of these companies in the past have been practically confined to lubricating oils. The output of the plants was generally disposed of to large buyers, notably railroads and other public utilities. It is known that the companies during the past few months have lost considerable business to other large refiners of lubricating oils, including the Vacuum Oil Co. and Sinclair Refining Co. It is believed that the loss of this business resulted in the determination to enlarge the wholesale and retail marketing facilities together with the manufacture of all refined products.

NATIONAL PETROLEUM ASSOCIATION SESSION

PITTSBURGH, Pa., Dec. 29.—The quarterly meeting of the National Petroleum Association, composed of refiners and marketers, was held in the William Penn here last week. There were about 30 members in attendance. Col. U. G. Lyons, president, of Warren, Pa., presided. At the morning session, Fayette B. Dow, of Washington, D. C., addressed the members on taxation. The first subject discussed was local pipe line rates and it was agreed action should be taken in the name of the association to bring the matter before the Interstate Commerce Commission for revision.

At the afternoon session Fayette B. Dow spoke of freight rates on the different petroleum products. This led to a general discussion in which a number of members participated. It was the consensus of opinion that in many instances shippers had been discriminated against, the shipper paying more freight on a shipment of kerosene and gasoline than the actual amount of the car's contents.

Judge C. D. Chamberlin of Cleveland, Ohio, secretary of the association, and L. P. Litzinger of Butler, spoke of privately owned side track privileges and the placing of the responsibility in case of fire caused by the railroads.

BUYS TEXAS HOLDINGS

WICHITA FALLS, Tex., Dec. 29.—The Griswold Oil Corp. has purchased the holdings of the Kentucky Oil Corp. and others consisting of a 38-acre producing lease on the L. F. Wilson land in Archer County. The consideration is reported to have been $250,000. The property has one well producing around 500 bbls. The Griswold Oil Corp. has a refinery located at Electra and also has considerable production in several pools in the North Texas area.

NEBRASKA INDEPENDENTS MARKET MORE GASOLINE AND KEROSENE

Independent jobbing interests in Nebraska the first 10 months of 1923 marketed a greater percentage of gasoline and kerosene than they did during the years 1922 and 1921. Comparative figures, based on the inspection reports of the State Department of Agriculture just issued, show that the independent jobbing interests marketed 45.63 per cent the first 10 months of this year, 43.32 per cent in 1922 and 36.32 per cent in 1921. In contrast in 1921, the Standard Oil Co. of Nebraska marketed 44.2 per cent of the gasoline and kerosene, 38.4 per cent in 1922 and 35.7 per cent during the first 10 months of 1923.

The report which follows gives interesting data covering the sales of the Standard Co. and the principal independent jobbing interests in Nebraska:

Nebraska Gasoline and Kerosene Gallonage First 10 Months of 1923
(From Inspection Reports of the Departments of Agriculture; Grant Shumway, Dep. Sec.)

Company—	Gasoline Gallonage	Kerosene Gallonage	Total
Standard Oil of Nebraska	32,589,425	9,728,565	42,327,990
Sinclair Refining Co.	5,805,168	1,211,347	7,016,515
Manhattan Oil Co. of Nebraska	4,618,679	1,946,870	5,153,583
Mutual Oil Co.	3 876,093	1,277,490	5,153,583
Nicholas Oil Corporation	3,739,099	537,430	4,276,529
B. & L. Oil Co., Fairbury	1,249,578	389,121	1,638,709
Coryell & Son, Lincoln	1,041,377	281,002	1,322,379
All other companies	41,974,274	8,859,975	50,834,249
Total (10 months)	94,893,690	23,349,810	118,243,500
Standard (per cent of total)	34.3%	41.6%	35.7%
Sinclair	6.1%	5.6%	5.9%
All others	59.6%	52.8%	58.4%

Comparative Annual Percentages Gasoline and Kerosene

Year	S. O.	Sin.	Man.	Mutual	Nich.	All Others
1921	44.2%	6.62%	5.11%	4.44%	3.31%	36.32%
1922	38.4%	4.98%	5.44%	4.49%	3.37%	43.32%
1923 (10 months)	35.7%	5.90%	4.81%	4.35%	3.61%	45.63%

Note: The following companies are in the first 10 Independent companies in greatest total gallonage. The Shaffer Oil & Refining Co., the National Refining Co., the State Oil Co., Lincoln, the A. B. A. Oil Co., Lincoln, the S. L. Collins Oil Co.

Collections based upon the first 10 months totals would be on 2,564,870 barrels of 50 gallons each. The income for the state at 3 cents per barrel is $76,946.10, an average of $7,694.61 each month.

STANDARD OF INDIANA SUES COSDEN CHARGING PATENT INFRINGEMENT

The Standard Oil Co., of Indiana, Saturday, in the United States District Court, Eastern Division of Oklahoma, filed suit against Cosden & Co., alleging the infringement by the latter company of certain basic patents which are controlled by the plaintiff. It is alleged in the petition that Cosden & Co., for a period of six years in operating its West Tulsa refinery has used certain operating processes which were invented by William M. Burton and Robert E. Humphreys and which represent patented improvements for the manufacture of gasoline. The petition states that these inventions, commonly known as the Burton cracking process, were patented by the Standard Oil Co., of Indiana, in 1914.

The petition is brief. Regarding the alleged infringement the petition states "defendant has infringed said patents within six years last past by practicing the processes and improvements of each thereof and by making, using and selling the products and compositions of matter described therein, since the grant of patents. Defendant has been notified of said infringements and continues and threatens to continue infringements." The plaintiff asks an injunction preventing further infringement with damages not to exceed three times the actual damages and profits.

The suit is another step in the litigation which has centered around the so-called cracking processes for several years. The Standard of Indiana company has always contended that its patents prevented the use of several of the processes now on the market. Its suit against the Universal Oil Products Co. has been in the courts for several years involving the Dubbs process.

Other than a general denial to the allegations of the petition no official announcement has been made by the Cosden company. It was stated by officials that several times in the past, the two companies have had conferences regarding the contention of the plaintiff company. Cosden & Co. has several patents covering the cracking process used at its plant which it is claimed in no way infringe on the patents of the Standard company.

Cosden & Co. first installed a cracking process about six years ago. It is understood that the process installed at that time was partially or wholly the invention of J. W. Coast, who was superintendent of the plant. After Mr. Coast had left Cosden & Co. a dispute arose as to the patent rights between him and the company. These claims are now in litigation. It is understood that from time to time Cosden & Co. has added several improvements to the original process and it is now said to be one of the most efficient of the several processes that are used in refinery operation.

Although the Burton and Coast processes are similar in several respects they differ in others. In the Coast process the pressure is released before the vapors reach the condenser instead of after condensation as in the Burton process. This is said by engineers to be the most important difference between the two processes. Approximately the same gasoline recovery is claimed for both processes.

In Mid-Continent refining circles the latest suit of the Indiana company is considered a further attempt on its part to sustain its general contention that pressure processes, such as that used by the Cosden company, violate the basic patents of the company covered by the Burton process. It is understood that the company contemplates filing additional suits involving other processes not covered by working agreements. It is not expected that the latest suit will come up for hearing for several weeks.

TO BUILD CRACKING PLANT

HOUSTON, Tex., Dec. 29.—The Knox Process Corp. of New York, has purchased 140 acres at Texas City on which a cracking plant will be erected. Work on the first unit will be started after January 1. The Knox cracking system will be used. The process is owned by William J. Knox of Pittsburgh, Pa.

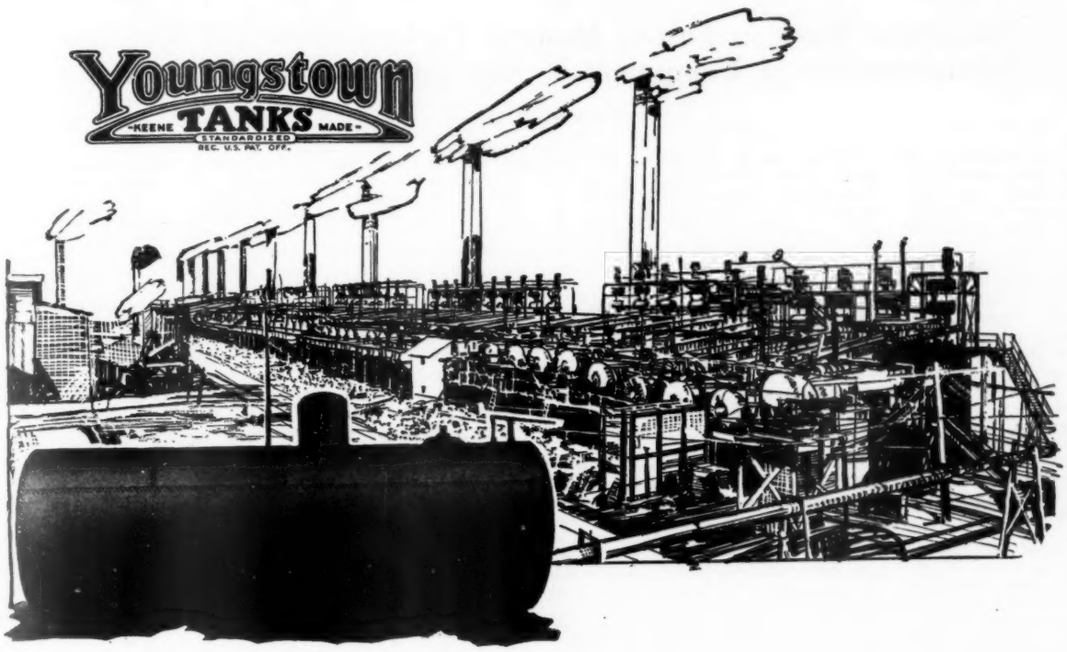
MID-CONTINENT REFINERY OPERATIONS, DECEMBER 22

Total runs to the stills of Mid-Continent refiners increased approximately 150,000 bbls. daily for the week ending December 22, according to the weekly report of the Western Petroleum Refiners Association. Gasoline and kerosene output increased over the previous week, with a decrease in the fuel and gas oil output. Gasoline stocks were increased, while gas and fuel oil stocks declined.

CONSOLIDATED STATEMENT COVERING ALL REPORTING REFINERIES FOR WEEK ENDING 7 A. M., DECEMBER 22, 1923

	Kansas	Oklahoma	Texas	Louisiana & Arkansas	Total	Week End. Dec. 15	Week End. Nov. 17	Week End. Nov. 1
Number of refineries reporting	24	57	39	11	131	131	123	115
Daily capacity of stills, bbls.	82,900	259,200	129,650	26,100	497,850	497,850	470,350	437,050
Materials for stills, bbls.:								
Crude oil, item A	247,733	789,533	559,287	80,884	1,677,437	1,795,219	1,612,082	1,454,710
Other oils (see note), item B	18,996	96,091	145,181	15,879	276,147	319,375	504,133	895,363
Total	266,729	885,624	704,468	96,763	1,953,584	2,114,594	2,116,214	2,350,073
Output of finished products, gals.:								
Gasoline, item C	3,664,268	13,317,203	6,456,085	926,385	24,363,941	23,954,477	22,096,664	20,230,695
Kerosene, item D	1,298,134	4,466,437	1,522,939	327,464	7,614,974	7,719,347	7,575,552	5,960,833
Gas and fuel oil, item E	5,480,160	16,726,384	13,738,036	1,695,551	37,640,131	39,291,931	37,347,485	30,794,197
Stocks on hand at close of week:								
Materials for stills, bbls.:								
Crude oil, item J	597,584	4,465,499	981,930	988,460	7,033,473	6,972,928	5,779,134	5,429,353
Other oils (see note), item K	17,600	822,192	336,937	511,641	1,688,370	1,860,427	1,342,110	1,976,182
Finished products, gals.:								
Gasoline, item L	5,297,445	61,783,507	35,796,814	1,462,352	104,340,118	101,290,719	98,748,090	103,242,228
Kerosene, item M	1,651,550	10,125,235	6,491,738	168,504	18,434,027	20,240,329	18,240,635	13,577,653
Gas and fuel oil, item N	6,406,513	44,655,938	33,816,442	2,319,493	92,098,385	101,351,913	113,493,647	116,228,176

Note: Other oils includes all oils other than crude which are either purchased or withdrawn from stocks and run to stills during the week. The total of items A and B is, therefore, the net quantity of materials consumed by the reporting refineries in producing the quantities of products shown as the result of the operation of the refineries during the week. Item K includes all stocks of oils, other than crude, held for further refining.



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YOUNGSTOWN BOILER & TANK Co.
YOUNGSTOWN, OHIO.

YB Co.

Making the Petroleum Industry Safe

Important Work in Testing Material Performed for Oil Men and Manufacturers of Equipment by the Underwriters' Laboratories

By Ralph T. Baker

CHICAGO, Dec. 31.—Handling of petroleum is attended with considerable fire hazard when compared to the products of other industries. Even in the old days when Pennsylvania rivers were alive with barges piled with wooden barrels containing the high grade and highly inflammable crude oil produced in the northern part of the State, the workmen, teamsters and bargers recognized the danger and governed themselves accordingly. From that day to the present time the progress of petroleum, from the time it is delivered at the well until some portion of it is used in engine or burner, is guarded scrupulously.

Iron pipe has replaced the wooden barrels and barges in conveying the oil to the refineries. This has eliminated much of the fire hazard and secured the development of modern methods of manufacturing petroleum products from crude oil. At other turns in the road, steel and iron have replaced wood, making petroleum safer for America. The wooden flow tank, favored in most fields until the recent establishment of the gravity system for purchasing crude oil, was the final barrier in the road which offered basic resistance to safety enthusiasts.

What is left to be done, the casual observer may ask? If it is true that petroleum is so bound around by a network of steel from the well to the automobile, where is the room for any additional safety factors? Why all this agitation about safety anyhow?

"For Service—Not Profit"

Since its establishment as a corporation chartered by the State of Illinois in 1901, Underwriters' Laboratories, has bad as intimate connection with the perfection of safety in the many phases of the oil industry as it has in other industries. Established by the National Board of Fire Underwriters, with the slogan "For Service—Not Profit," the object of Underwriters' Laboratories has been to bring to the user the best obtainable opinions on the merits of appliances, devices, machines and materials in respect to life, fire and collision hazards, and theft and accident prevention.

The work was undertaken as one means of reducing the enormous and disproportionate loss of life and property by fire and accident. With the perils of petroleum apparent, much work was done in making it a safer commodity to handle. For the purpose of giving accurate and scientific reports on articles submitted in connection with the various problems that arise from time to time, Underwriters' Laboratories has maintained complete testing equipment, a corps of experienced engineers and a unique record and label department for the protection of its users and the general public.

The main Chicago plant is housed in a large building near the center of the city and has all modern facilities for the examining and testing of appliances and devices submitted by those interested in their perfection. The long experience of the laboratories in this work, and the methods employed for keeping in close touch with manufacturers, users, inspection bureaus and all other sources of practical information have resulted in a general recognition of its standards and recommendations.

Founded, as it was, by the National Board of Fire Underwriters, the work of Underwriters' Laboratories naturally is concerned with safety and fire and accident prevention. Practically every line of endeavor, where there is any conceivable hazard, has been given its just amount of attention.

The operation of the institution can be illustrated by considering the hypothetical case of a manufacturer of oil field equipment. He may have spent thousands of dollars in perfecting his device mechanically, securing patent rights and in giving to the trade something that will be accorded ready demand and sale.

His intentions may have been the best, but he possibly overlooked a few of the necessary factors of safety, thus endangering life and property while the device is in use. The manufacturer in this case may realize the possibilities of hazards in using his device, and for the sake of securing the greatest safety possible and obtaining the approval of the standard by which safety devices are measured, he takes his device to Underwriters' Laboratories for a thorough test. Here an investigation is made and a report is issued.

Prior to the actual examination, a fairly complete description of the device is sent to the labaratories, by the manufacturer, making it possible for the men in charge of the testing to classify the product and determine, in a general way, the probable nature and extent of the necessary examinations and tests. An application blank is then sent the manufacturer together with the character and number of samples needed for the experiments. Fees in all cases cover only the actual expenses of each investigation.

Many months often are required for the completion of test work, and engineers often are sent out to make complete and minute examinations of installed systems and machines.

Accepted by Underwriters

With no axe to grind, the aim of the founders of Underwriters' Laboratories has been to secure the best and fairest opinion regarding the merits or demerits of every device, system, machine or material, in respect to life and fire hazards, and to have the work so conducted and reviewed as to secure accuracy and uniformity in its findings. The object has been accomplished and the scope of the laboratories' work has broadened to such an extent that the majority of the underwriters in the United States, Federal, State and municipal authorities, plant operators, architects and building owners, now either accept or require a report from the laboratories incident to their recognition of devices, systems and materials having a bearing upon life, fire and collision hazards.

The growth of the oil burner industry has been one of the most recent problems for Underwriters' Laboratories in connection with the oil industry.

There exist permanent arrangements between Underwriters' Laboratories and the Bureau of Standards of the Department of Commerce of the Federal Government and between Underwriters' Laboratories and the Bureau of Mines of the Department of the Interior, whereby in the event of a fixed difference of opinion on a techinical matter between Underwriters' Laboratories and any of its clients, the question at issue may be submitted to either bureau for decision.

If at the conclusion of the work upon any appliance, system or material, the results are such as to lead to a recommendation for the specified use as standard, a complete report, including findings of the laboratories' engineers, is prepared and submitted to one or more of five advisory councils (fire, electrical, casualty, automobile and burglary) and final action and listing of an appliance or material by the laboratories is dependent upon a required number of favorable ballots from members of the council concerned. The findings of the laboratories' engineers are thus submitted to the judgment of men of wide field experience as Federal, State and municipal Governments and insurance organizations are represented on these councils.

Manufacturer Gets Report

At the conclusion of the investigation and of consideration by the council, a copy of the report on the device is sent to the manufacturer interested. If the results of the examinations and tests are such that a product cannot be recommended for listing, a detailed report is made to the submitter only. In this case, he becomes aware of the salient defects in his apparatus and takes the proper steps to correct them, in many cases sending in a satisfactory device at a later date.

Only products produced commercially and concerning which the actual manufacturer is known, are eligible for listing, bu the laboratories are prepared to receive, examine and test devices in the model stage and to render to the submitter a report for his information and guidance for further development. Summaries of the laboratories' reports are contained on printed cards filed according to classification, and cabinets containing these cards are maintained at the offices of the principal boards of underwriters and inspection bureaus in the United States, at many of the general offices of insurance companies and firms, at certain Federal, State and municipal departments and at the offices and agencies of the laboratories in the larger cities.

In the hypothetical case of the manufacturer of an oil field appliance, when he has satisfied the laboratories and councils, and a report of his device is issued, the favorable opinion contained in the report, is followed up by one of the following three forms of supervision over goods marked under the approvals.

Three Forms of Supervision

The oldest of these forms is the re-examination service, in which the maker agrees, during the continuance of listing as standard, to pay certain fees annually, with which the laboratories defray the costs of obtaining samples in the open market or from the manufacturer and of making examinations and tests of the

(Continued on Page 82)

Fire test of visible gasoline filling station pump

The Dubbs Process will today under present market conditions profitably crack any product of your refinery that has a lower market value than your crude

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PRICES ADVANCING IN CHICAGO AREA

New Navy Gasoline Paved the Way With Practically All Refinery Products Quoted Higher. Refiners Feel They Have Situation in Their Own Hands Now and Are Optimistic Regarding Outlook for 1924

By Ralph T. Baker

CHICAGO, Dec. 31.—Chaos reigned in the Chicago territory during the past week. The muddled condition was not the result of panic on the part of refiners, marketers and jobbers, but was caused by growing realization of higher values for petroleum products which finally resulted in a 2-cent increase in gasoline tank wagon and service station prices in the Standard Oil Co. of Indiana territory, effective Saturday, December 29.

The increased tank wagon prices caused relatively little stir among the refiners and marketers, and the price of New Navy continued to soar. Sales to the trade were being made at 9 cents Saturday morning with numerous predictions that the coming week would see additional material increases in all refinery prices.

Any accurate report of the events of the week leading up to the increase in the gasoline tank wagon prices would have to enumerate several salient features which have had a significant bearing on the price changes and which continue to cast a bullish light over the situation.

Good Weather Helps

In the first place, the much-talked-of weather in the Eastern and Central States has continued good with few interruptions. The temperatures have been mild and the roads good. Motorists have seized the opportunity to travel as never before. Filling stations have been able to do little more than keep their tanks filled for current needs. Jobbers, at first afraid to trust the weather, were caught without supplies and have been forced to buy from day to day, after the refiner and marketer found they had obtained the upper hand in the matter. Pleas from jobbers for marginal contracts served only to place the refiner in a stronger position, and to strengthen his resolution that it is "his turn at bat."

Without the influence of good weather, the knowledge of growing scarcity of crude supplies in all parts of the Mid-Continent has been of material aid in the up-turn of the market. From all reports, crude is being sought. Smaller refineries are forced to pay premiums in many cases. Runs are being held down, with the result that gasoline production is not as far ahead of consumption as it has been in former years. Advances in Pennsylvania crude prices, advances in other parts of the Eastern producing section and the entire Mid-Continent area, coupled with the new prices of The Texas Co. in Oklahoma, have served as evidence to refiners that crude is not easy to get, and points to the assumption that it will be scarcer and more expensive in the coming weeks. The result of the crude situation has been passed on to the refiner who was forced to take the only method in his power to seek relief.

Refined products were advanced slowly at first. There was some hesitation near the 6-cent level, but as the situation grew more apparent to all interested, arguments over prices became less and less. The burst of speed which carried the tank car market for New Navy to 9 cents was the result of a growing conviction on the part of the marketer and jobber that motor fuel must be obtained at the present price—or it would be sold to them later at a much higher price.

Refiners Are Optimistic

Refiners are jubilant at the prospects for 1924. They declare that as 1923 saw a jobbers market, so 1924 will see a refiners market. "Why shouldn't we have a chance now?" they argue. "The easy pickings of the past year resulted in the entrance of every, Tom, Dick and Harry into the filling station business. Curb pumps by hundreds were placed in service. No grocery was complete without one. Jobbers and dispensers bought low and sold high. Refiners with contracts found them mere scraps of paper when jobbers found the spot market more to their liking. Give us a chance to pay our debts now and recuperate from the disasters of 1923."

There is no doubt that the refiner will make money if the present situation continues. Prior to the recent advance in tank wagon prices, jobbers were paying about 8 cents for New Navy, plus 2.38 cents freight, making 10.38 cents, with an average tank wagon price of 12 cents. It surely was not a jobbers market. The tank wagon advance was partially discounted the day before it was announced with the several sales reported at 8½ cents. A continued bullish sentiment promises to cut down any advantage the jobber received from the increase.

In this connection it might be stated that Chicago oil men feel that the recent tank wagon advance is only a starter. Some enthusiasts declare increasing refinery prices will force another 2-cent advance in the tank wagon prices in two weeks. They forget the influence of the weather on motoring and the law of crude supply and demand. Their arguments are not without foundation, however.

Refined products were scarcer than ever during the latter part of the past week. The group of refiners who have been consistently sold up over a period and have been the leaders in advancing prices, have had several noteworthy additions to their ranks recently, and it is an exceptional event to find a refiner who can or will make quotations on the various products. It is no trouble to dispose of gasoline in Chicago now.

New Navy Gasoline Scarce

Marketers with considerable amounts purchased earlier in the month from the refiners are jubilant. Recently, purchasers have been unable to secure immediate shipments. They assert that the refiners of Oklahoma, in increasing numbers, are refusing to sell gasoline, preferring to store it in anticipation of even higher prices early in 1924. If these tactics continue in effect, the scarcity of New Navy will reach the acute stage, and it is easy to imagine the possibilities for another increase in the tank wagon schedule with soaring refinery prices.

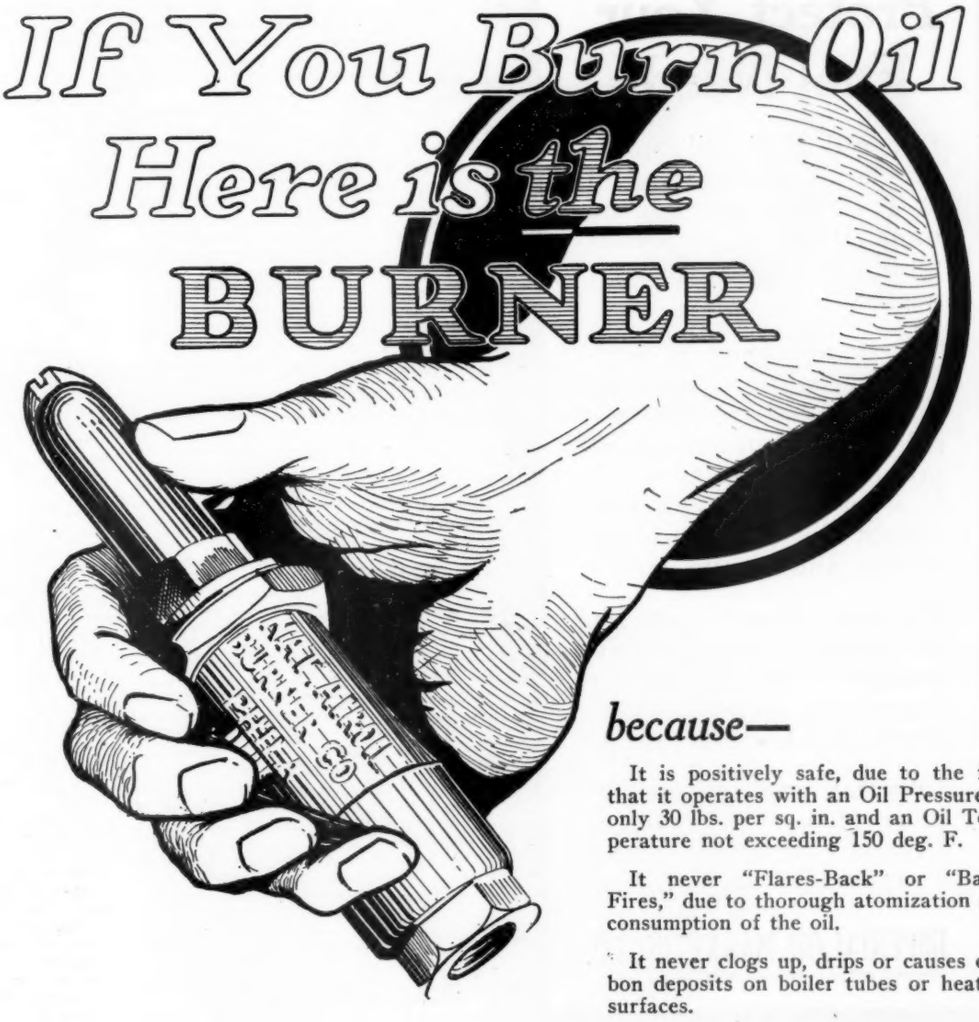
In addition to the larger number of refiners who refused to quote prices, there were several refiners actively in the market for New Navy and other petroleum products, in direct competition with jobbers. Several marketers report large sales for immediate delivery to refiners of national prominence, caught without sufficient supplies for current demands.

It is anticipated by students of the market that the refiners as a whole are determined to remain steadfast in their refusal to sell until after January 1. They will feel out the market for 1924 carefully before committing themselves to any large orders. Several refiners have been frank in their assertions that they intended to turn down all contracts and put practically all their output on the spot market during the coming season. Concerted action along this line cannot fail to have a bullish effect. A few refiners are sold up over January and some have February orders. In the main January business has been a good indication of a bullish market, and refiners and marketers alike anticipate a big rush of business from jobbers soon after January 1.

New Navy paved the way for the gen-

(Continued on Page 102)

If You Burn Oil Here is the BURNER



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ATLANTIC COAST REFINED MARKET CONTINUES FIRM; DEMAND GOOD

By N. O. Fanning

NEW YORK, Dec. 31.—The refined oil markets were firm during the past week. Lubricating oil and wax continued the strongest features, holding their recent gains, while refinery prices of other products were stationary.

Little change was noted in the gasoline tank wagon situation. Despite an advance of 2 cents per gallon in the market in the Middle West, marketers here do not look for an advance in this territory until about the middle of January. The market is well held at 15½ cents per gallon in the principal cities, 14½ cents in some of the smaller interior cities and as low as 13½ cents in the remote and smaller towns. Tank car offerings are in smaller volume, and at slightly higher quotations, approximating 10 cents per gallon, delivered.

Consumption of gasoline continues to hold up unusually well, and local service station owners are rather in hopes that prices will not advance to any great extent this winter, as they believe it might hurt the trade somewhat. It is reported on the part of several service station dealers that automobile owners as a rule are paying more attention to gasoline prices than they were one or two years ago, when they scarcely paid any attention to their fuel bill. This is said to be due to the fact that the average person looks upon the automobile as a necessity, and not as a luxury, and is therefore more particular about running expenses.

Consumption Increasing

There is every prospect of increased gasoline consumption in 1924. This is based on the increased use of automobiles, and especially trucks used to deliver goods from factories short distances. A survey has been made showing this situation as it exists in the State of Connecticut by T. H. MacDonald, chief of the United States Bureau of Good Roads. This survey reveals that while 1,019,688 net tons of commodities were transported over the Connecticut highway system during the three months ended December, 1922, the competition of the highway with the railway is not as serious as this figure would indicate. More than a third of the tonnage was moved only from 1 to 9 miles, and was a local non-competitive distribution of goods; 30½ per cent was moved from 10 to 29 miles. The balance of the total net tonnage, approximately 33 per cent was transported 30 miles or more. The motor bus is growing in importance as a means of passenger transportation between the smaller towns and cities of New York and New England. In some cases bus systems have replaced trolley service entirely.

One prominent sales manager told the writer that kerosene is one of the strongest features of the eastern refined oil markets, that an advance in the price was quite probable, and that it would not be surprising if kerosene should sell higher than gasoline before the winter is over. He states that the demand is exceptionally good, due largely to the increasing use of furnace oil. Kerosene is also still used largely for heating and illuminating purposes in the rural districts of the East.

Refinery Stocks Small

Although there is an ample supply of the principal refined oil products on hand at refineries at present, indications are that they will have to be built up considerably if next summer's demand is to be met satisfactorily. This means that a high rate of refinery operations should prevail through the winter. Although stocks of crude oil at refineries are rather high, the bulk of the excessive stocks are in field or at tank farms, and the movement from these sources to refineries should be large, not only by tank steamer but by transcontinental pipe line.

Three Main Crude Sources

Figures compiled exclusively by The Oil and Gas Journal relative to receipts of crude and refined oil by water at Atlantic Coast ports show that there are three chief sources for the raw material used in Atlantic Coast refineries, and that the quantity received from each source is fairly equal. These three sources are the Gulf Coast district, the Pacific Coast and Mexico. From 1920 to 1922 there were only two large sources, that is the Gulf and Mexico. The decline in production in Mexico has been offset by increased receipts both from the Gulf and Pacific Coasts.

The Gulf Coast contributes the largest quantity at present, with the Pacific Coast second and Mexico and other foreign countries (Peru and Trinidad) third. It is estimated that of the oil received by water the largest part consists of crude oil and fuel oil—probably 80 to 90 per cent, of which 50 to 60 per cent represents crude and 30 per cent fuel oil.

In this connection a table is given below, which will be a regular feature from now on, showing estimated receipts, based on movement of oil tankers, of crude and refined oil by water to Atlantic ports from the three principal sources over a period of months. This table, it is believed, will be valuable as showing relative purchases of crude in the various fields, and rate of refinery operations on the Atlantic Coast.

The following table shows estimated daily average receipts of crude and refined oil by water at the principal Atlantic Coast ports for the last two weeks, and for the months of November and October, 1923, (barrels):

	Week Ended		Month	
	Dec. 28	Dec. 21	Nov.	Oct.
New York	156,000	142,000	215,000	238,000
Philadelphia	108,000	28,000	95,000	109,000
Baltimore	23,000	21,000	28,000	41,000
Boston	46,000	22,000	24,000	26,000
Fall River	21,000	11,000	9,000	15,000
Providence	7,000	63,000	13,000	17,000	
Norfolk	.....	.....	12,000	9,000
Charleston	.....	.....	31,000	11,000
Miscellaneous	16,000	23,000	29,000	31,000
Total	377,000	310,000	436,000	498,000

Receipt of crude and refined oil from the Gulf Coast averaged 173,000 bbls. daily during the week ended December 28. The following table shows estimated daily average receipts from various sources since July 1, 1922, (barrels):

	Gulf Coast	Pacific Coast	Mexico and other foreign	Total
Week ended:				
December 28	173,000	91,000	113,000	377,000
December 21	92,000	111,000	107,000	310,000
December 14	245,000	223,000	128,000	596,000
December 7	191,000	109,000	128,000	443,000
Month:				
November	186,000	141,000	109,000	436,000
October	200,000	164,000	134,000	498,000
September	165,000	146,000	109,000	420,000
August	176,000	170,000	110,000	456,000
July	160,000	138,000	116 000	414,000

The foregoing table shows that during December so far the daily average receipts from the Gulf amounted to 175,000 bbls., from the Pacific 134,000 bbls. and from Mexico and other foreign countries 119,000 bbls., a total of 428,000 bbls. a day. This compares favorably with the movement between July 1 and November 30, 1923.

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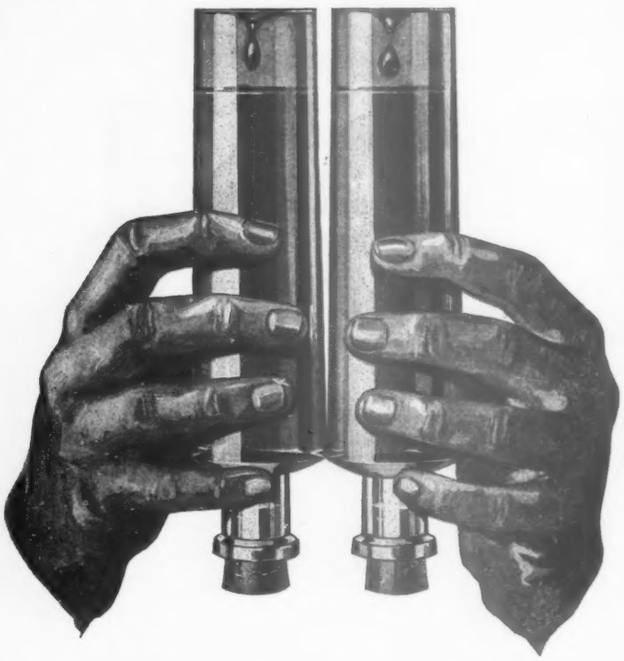
ALL STEEL SLEEVE—Fig. 5
Made in All Sizes

For use on broken lines as well as screw lines at intervals, to withstand expansion and contraction

The DAYTON PIPE COUPLING Co.
Dayton, Ohio.



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Chicago, Ill.	Kansas City, Mo.	New Orleans, La.	San Francisco, Calif.
Cincinnati, Ohio	Los Angeles, Calif.	New York, N. Y.	Seattle, Wash.
		Philadelphia, Pa.	

MAKING OIL INDUSTRY SAFE THROUGH TESTING

(Continued from Page 76)

appliance one or more times yearly. Substandard features, if any are found as a result of the re-examination, are corrected by the maker on subsequent products.

The second form of supervision is the inspection service, which is regarded by the laboratories' management as superior to the re-examination service and is applied as far as possible wherever the label service, later described, is not considered practicable. The inspection service includes regular and frequent examinations and tests of products at factories by laboratories' engineers and the correction by the manufacturer of features found not in compliance with the standards of efficiency shown by the samples originally tested, and also supplementary examinations at the laboratories of samples purchased in the open market or received from inspectors and users, thus affording counterchecks on the factory inspection work and determinations of the service value of the product.

The third form of supervision is the label service. This is regarded by the laboratories as the most efficient and acceptable of the three methods of supervision, and is being utilized to a greater extent each year. This service consists of inspections of devices and materials at the factories by laboratories' engineers, and the labeling of standard goods by stamps, transfers or labels, whereby they may be recognized wherever found. In addition it includes systematic supplementary examinations and tests at the laboratories of samples of labeled goods purchased in the open market or received from inspectors or users, thus serving to countercheck the efficiency of the factory inspection work and to determine the service value of the product.

Check Tests

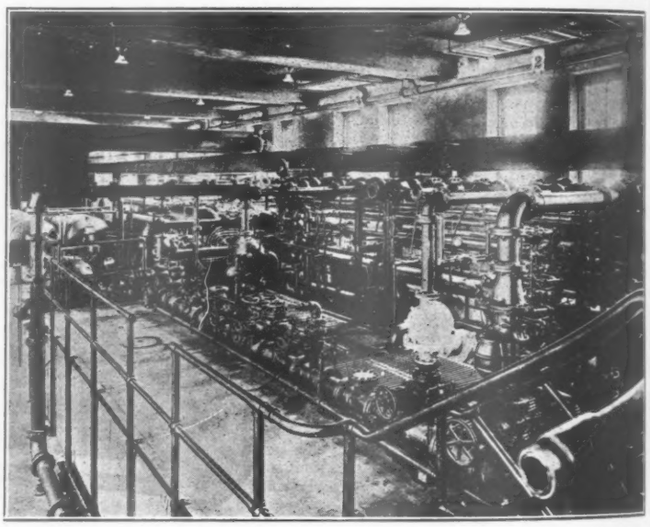
For a number of industries this service now includes inspection of the product at factories, check tests on materials purchased in the open market, service value determinations by re-tests of samples which have been in practical use, and schedule estimates, showing comparative demerits noted on products. These elaborations are working advantageously to all concerned and are at all possible only under the labeling system. Approximately one-half billion labels were utilized on products during the year ending December 31, 1921.

Experience has shown that this method is in every way superior for the purpose of bringing to the consumer the article he desires, for the purpose of placing competition between manufacturers beyond the point where deterioration in the quality of the output is made necessary, and for the proper protection of the laboratories and the organizations co-operating with it, which are giving substantial recognition to efficient protection appliances.

It has also been shown that an inspection and checking system of this nature can be efficiently operated under the laboratories' direction without calling upon the manufacturer to give undue publicity to his manufacturing process or subjecting him to any embarrassment or annoyance.

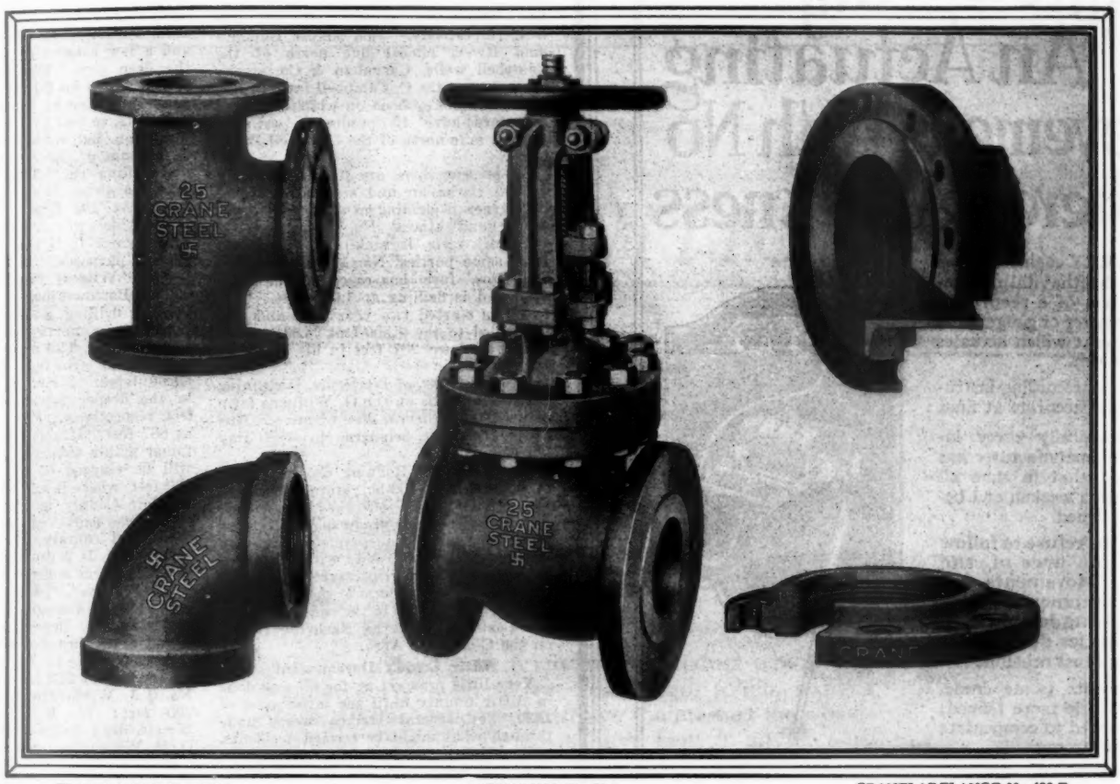
Wide Activities

Unknown to the average oil man perhaps, and to the average user of petroleum products certainly, he comes in contact with the work of Underwriters' Laboratories at countless places. A partial list of materials and devices tested by the laboratories includes the following: Acetylene equipment, including blow pipes or torches for welding and cutting, cylinders, gauges, generators, valves and regulators; fire alarm systems and protection devices for refineries, including hose, patented extinguishers, fluids and apparatus as well as pumps; tankage, couplings, hose, etc., for filling stations; unloading devices for bulk stations; electric lighting plants; gas, gasoline, kerosene and fuel oil engines; hand fire extinguishers; valves and fittings for use on gasoline and oil storage; gas meters, fittings, valves and regulators; gauge and thief hole covers for oil storage tanks; vents for oil tanks; sheet packing; cement paint; pipe and fittings; roofing; many kinds of pumps; swing joints; thermostats; threading and gauging tools, and oil burners, to which could be added with equal reliability a large number of additional apparatus.



Hydraulic laboratory where various pipes, pipe fittings, valves and devices are tested

Having done much for the oil industry in increasing the safety factor in the handling of petroleum and petroleum products in the past, Underwriters' Laboratories is realizing the immense amount of work which the oil business will afford it in the future. Oil men are realizing as never before the tremendous importance of eliminating fire risk and life hazards in connection with any new apparatus planned for use in the oil fields, around refineries or at filling stations. Elimination of risk in connection with old equipment is equally important. Underwriters' Laboratories is testing new devices through trained engineers and adequate scientific apparatus and as in the past, if defects are found, they must be corrected. Oil men and manufacturers of oil equipment are placing a growing reliance in the work of this institution.



FLANGED TEE, No. 405-D
SCREWED ELL, No. 760-D

GATE VALVE, No. 53-A

CRANELAP FLANGE, No. 493-E
SCREWED FLANGE, No. 491-E

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For piping used around cracking stills in refineries, under working pressures of 150 pounds or less, and temperatures up to 900 degrees Fahrenheit, Crane cast steel valves and fittings, "Series 25," are the logical materials to use in making the installation.

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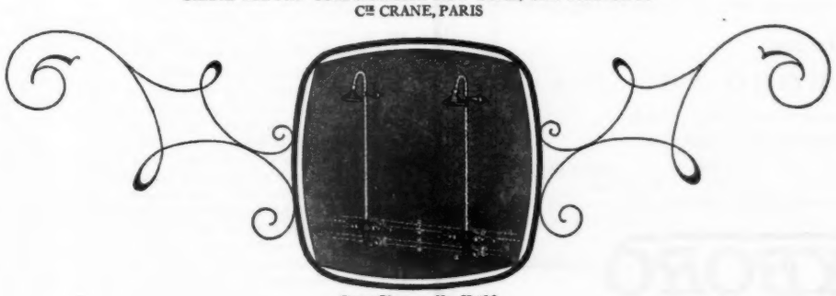

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EVERY engineer knows that the vital mechanism of a recording thermometer or gauge is the movement which actuates the pen arm.

Almost all recording instruments are accurate at first.

But practically every instrument manufacturer has admitted that in time all movements weaken and become fatigued.

Pen arms refuse to follow the time arcs of the charts. Movements become permanently "set." Multiplying devices cause inaccuracies due to friction and lost motion.

Adjustments (some crude, some a little more refined) are provided to compensate for these errors.

Some manufacturers even specify limited "working ranges". within the chart scale.

Adjustments, limited "working ranges" and other makeshifts can *relieve for the moment*, but they can never *cure* the real trouble—*The Inherent Weakness of the Actuating Movement.*

Two and a half years ago Foxboro engineers discovered an entirely new method of making the Foxboro Helical Tube Movement.

So important was the discovery—so far-reaching its consequences that although Foxboro engineers were positive of the result, no announcement was made until the movement had demonstrated its superiority in every conceivable test of service.

We can now announce that the Foxboro Improved Helical Tube Movement overcomes all the so-called "necessary evils" of Recording Instrument construction.

It is permanent in calibration.

It does not weaken in service. It needs no adjustment.

It positively will not fatigue (set), split, leak or crack, even when subjected to excess pressures that carry the pen way beyond the outer edge of the chart.

Pen arms always follow time arcs of charts.

Accuracy within less than 1% of total scale reading is guaranteed.

For safety, accuracy, durability and dependability, specify Foxboro Recording Thermometers and Gauges—the only recording instruments equipped with the Foxboro Improved Helical Tube.

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THE COMPASS OF INDUSTRY

F071

W. KENTUCKY-TENN.

(Continued from Page 56)

farm, the Bagdad Oil Co., of Chicago, Ills., has two wells on power for the past three years. They both came in for good flush production at 600 feet and 229 feet, respectively. Just across Cumberland River, almost due north of the Campbell wells, Carnahan & Co. struck a fine pay on the C. Campbell farm at 230 feet. The Coffey farm on which the same operators have 15 producing wells is about 1 mile north of the Campbell Bros.' farm.

At present there are four wells being drilled, Carnahan and associates' No. 1 F. Garner is drilling at 240 feet; Armstrong and others' No. 3 on the Ed Campbell farm is making hole at 230 feet; same parties' No. 1 on the Campbell Bros.' farm has cased off the Cave sand and is drilling at 1,000 feet. This test was started two years ago and will be drilled to the 1,500-foot level. J. G. Elmitt is down 237 feet in his No. 2 E. Mann.

Edwin Brooks, of Louisville, is cleaning out several wells on the G. Williams farm and will give them a dose of nitro. This lease formerly belonged to the Day Oil Co.

The Carnahan Refining Co. is putting up a number of 500-bbl. storage tanks at the inland towns off the Cumberland River for refined products. A grease plant has just been completed and cup grease, axle grease, etc., will be turned out shortly. A small pressure still is also being installed to crack their gas oil.

Russell County is in the saddle between the Lexington and the Nashville Domes on the Cincinnati Arch.

Adair County Development

Very little prospecting for oil was done in Adair County until the latter part of 1920, but several strikes were made through what might be termed accidents.

Back in the sixties a number of wells were sunk in the county to secure supplies of salt. In a number of instances oil and gas were found in small quantities, but the only wells of consequence reported at that time, a little over 55 years ago, was one drilled on the east side of the town of Columbia, county seat of Adair County, near the old fair grounds, reported to have been a gusher; one on the Mose Campbell farm in the southern part of the county, on what is known as Harrod's Fork of Crocus Creek. This well was reported a very good producer, and oil was secured from it as late as 1907, when the flow became obstructed by overflows from the creek; the Moss well, near Gradyville, was drilled in about the same time, with a very superior grade of oil which tested 55 gravity. Oil can still be obtained from this well; two wells were drilled on the Mathew Armstrong farm, in the southern part of the county on Crocus Creek, near the mouth of Harrod's Fork, one of which flowed for a long period.

Nothing more in development was reported for over 30 years, when in 1902 a well was drilled just outside of Columbia, on the Conover farm, on the Burkesville road and Pettis Fork Creek, where a good flow of gas was encountered at approximately 700 feet. The well, after being on fire for some time, was plugged and abandoned. Notwithstanding it had been filled with mud and rocks for years, gas still escapes from it to such an extent that it can be lighted at any time.

Operations Renewed

The next period of suspension of development work covered 16 years, but in 1918 a well was drilled on the Jefferies farm, about 2 miles southeast of Columbia. A good looking gas sand was struck at 600 feet which showed considerable oil. In the same year two gassers were completed on the Hadley farm in the extreme southern part of the county.

While the results were not of a very substantial nature, still enough information was obtained to warrant the expenditure of time and money in development work, and during the first of 1921, extensive drilling was done. Among the wells completed were: Roy Petroleum Co.'s No. 1 Rector, on Damron's Creek, 17 miles northeast of Columbia; Palmer Oil & Gas Co.'s No. 1 J. S. Royce, 2 miles east of Columbia; Columbia Development Co.'s No. 1 Bob Rowe, north of the corporate limits of Columbia; J. B. Doolittle's No. 1 George Powell, on Cedar Creek, near Joppa post office, 6 miles southeast of Columbia. All these operations had fair shows in the shallow sands and a few showed for small pumpers in the deep pay. The Carnahan Oil Co. drilled a well on the E. G. Flowers farm, near Zion Cruch, 4 miles southeast of Columbia, to 800 feet, in the Pencil Cave formation, but could not go any farther on account of the exhausted capacity of the drilling rig. The hole was left in shape to go on down with it at a later date. At 200 feet a flow of gas was found which was piped to a nearby farm house where it is still being utilized for heating purposes.

Wildcat Now Drilling

The Bartow-Florida interests are at present drilling a wildcat test on the Smith farm north of the Cumberland County line. The present depth is 1,027 feet. Four showings have so far been encountered. First, at 160 and the rest in the deeper pay at 860,872 and 892 feet, respectively. Pencil Cave was found at 867 feet. If a paying producer is not found within the next 100 feet, the well will be plugged to the shallow sand at 160 feet, where it will be given a shot.

Adair County is located on the west side of the saddle of the Cincinnati anticline, and contains a number of small structures. It is drained by Russell Fork of Green River and Crocus Creek of Cumberland River. Its surface geology shows: Mississippian limestones and shales and the Devonian black shale.

Other Completions

Allen County: Alpine Co.'s No. 6 Cherry, dry at 273 feet; W. M. Leonard's No. 6 J. W. Starks 32 acres, 2 bbls. at 290 feet; W. R. Thompson's No. 1 Weigle, dry; Smith & Watterson's No. 6 D. B. Willoughby, dry at 386 feet.

Monroe County: Louisville Gas & Electric Co.'s No. 1 W. W. Wright, 9 miles north of Tompkinsville, dry at 900 feet. This test was about 1½ miles north of Tanneyhill's duster on the Williams farm. Bentley and associates's No. 1 Crabtree, at Vernon, south of Tompkinsville, was abandoned in the shallow sand at 550 feet; No. 1 Railey, of Turner & English, 5 miles west of Tompkinsville, is pumping 3 bbls. at 750 feet.

EASTERN FIELDS

(Continued from Page 56)

Roberts Bros. drilled a test on the Charles Hopkins farm through the Big Injun sand, showing a little oil. They will drill to the Berea grit and if nothing better is found will test the Big Injun. At the head waters of Indian Creek, McElroy district, Tyler County, the Carnegie Natural Gas Co. has drilled in second test on the Amos Lyons farm through the fifth sand, dry in all formations. On the head waters of Buffalo Creek, Grant district, Wetzel County, the same company completed a second test on the S. J. McIntyre farm, a very light pumper in the Big Injun sand.

Braxton County Active

Braxton County is coming to the front with more new work than in a number of years. The gas companies are the most active in this territory. Out of the last six completions but one is an oil producer, estimated at 20 bbls. a day. The work under way is pretty evenly divided between Birch and Otter districts. In the last named, the West Virginia Central Gas Co.'s second test on the Frank Engle farm is dry in all sands. In the same district, the Eastern Oil Co.'s test on the W. L. Ellison farm is good for 20 bbls. a day in the Maxon sand. The Hazel-Atlas Glass Co. has drilled its test on the W. O. Priest farm to a total depth of 2,939 feet and waiting for a shot. The Big Otter Oil & Gas Co. is drilling on the C. G. Boggs farm. The West Virginia Central Gas Co. started to drill a test on the William Lockhart farm. The same company is drilling on the W. B. Bender farm. Its test on the Ward Garee farm is drilling. The

RECOGNITION

THE fittest survive. Among men, methods, materials —only those best equipped for the conditions of the race—only those having certain qualities required for successful service are present at the top of the heap after having been fairly "weighed in the balance."

This principle, or law, is broadly applicable to industry. Each generation brings changed conditions and sterner requirements. Methods must be revised and materials must be improved in order to survive in this race of progress.

It is rare, indeed, that an industrial product which was popular forty, even thirty, years ago, fulfills today's needs. Those leaders that have maintained their position over a number of years have kept in advance of, at least in step with, the demands of the times for better service.

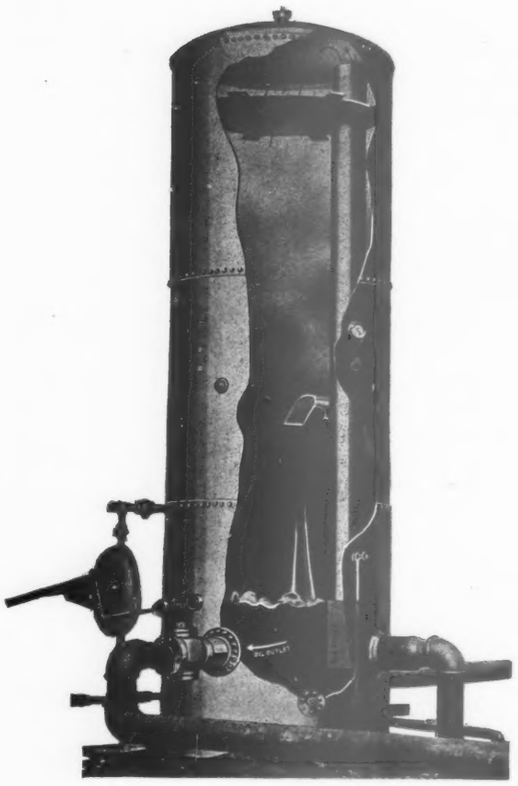
When any material has attained recognition as the standard of its class, and has held its position for more than fifty years, it merits the general approbation of the field it serves.

In return for the recognition accorded *"National"* Pipe, the organization responsible for its manufacture is pledged to further promulgate the policy of progress that has been responsible for the elevation of this material to its position as the *Recognized Standard of Wrought Pipe.*

NATIONAL TUBE COMPANY

Frick Building, Pittsburgh, Pa.

SMITH
OIL AND GAS
SEPARATOR



THE gas is so thoroughly removed from the production that there is no danger of damaging the receiving tanks because of escaping gas. Instances have been noted in which the pressure of the gas was so great that the receiving tank was buckled.

Smith Separator Company
Chestnut & Smith Corp. Bldg.
TULSA, OKLAHOMA

Star Basin Oil & Gas Co. is rigging up on the Frank Waldeck farm. In Birch district, the Philadelphia Oil Co. is drilling on the Gertrude E. Howell farm.

Deeper Gasser in Harrison

In Union district, Harrison County, the Hope Natural Gas Co. has completed a very deep test on the B. Trash farm. This well was drilled through the Benson sand to a total depth of 4,540 feet. It is a light gasser. This is one of a very few wells in that locality that has been drilled to what is known as the Benson sand. So far no oil production has been found in this formation and the volume of gas is so small as to make is unprofitable to drill to the depth named. In New Milton district, Doddridge County, Trainer & Travis have a gasser in the Big Injun sand at a test on the D. Adams farm. In the same district, the same parties have a 20-bbl. pumper in the Big Injun sand at No. 4 on the Albert Baker farm. In Union district, Harrison County, G. L. Cabot's test on the M. W. Davis farm is a gasser in the fifth sand. In Liberty district, Marshall County, the Manufacturers Light & Heat Co. has a gasser in the same formation on the Mary E. Courtwright farm. The Carnegie Natural Gas Co.'s test on the L. E. Conway farm is dry in all sands. The Manufacturers Light & Gas Co.'s second test on the J. A. Hixenbaugh farm in Church district, Wetzel County, is a gasser in the fifth sand. In Clay district, the same company has a gasser in the Big Injun sand on the W. G. Sidwell farm.

Light Fourth Sand Gasser

In Paw-Paw district, Marion County, the Owens Bottle & Machine Co. has a fair gasser in the fourth sand on the J. A. Rice farm. The Richard Elkins Gas Co.'s test on the Prussia Carper farm in Geary district, Roane County, is a salt sand gasser. In Washington district, Calhoun County, the Hope Natural Gas Co. has completed a light gasser on the J. M. Youst farm. In Grant district, Ritchie County, the Penn Royal Oil Co. has a 5-bbl. pumper in the salt sand at No. 3 on the Ira Jackson farm. In the same district, the Hope Natural Gas Co.'s test on the M. E. Rutherford farm is a duster in the Squaw sand. The Carnegie Natural Gas Co. has a gasser in the Big Injun sand at No. 6 on the S. S. Tharp farm. In DeKalb district, Gilmer County, the Laurel Run Oil Co. has a Big Injun sand gasser at No. 4 on the Floyd W. Beall farm. In Central district, Doddridge County, the Hope Construction Co. completed a 3-bbl. pumper on the Robert A. Smith farm.

In the same district, the J. R. Timms Oil & Gas Co. has a rig up on the Susan Douglas farm. The Mill Fork Oil & Gas Co. has two rigs up on the C. R. Boum farm and the South Penn Oil Co. one completed on the M. H. Rollyson farm. In Otter district, the P. K. Oil & Gas Co. completed one on the M. H. Rollyson farm. In Otter district, the P. K. Oil & Gas Co. is drilling at 1,650 feet on the Fletcher Stout farm. The Pittsburgh & West Virginia Gas Co. has completed at a total depth of 2,040 feet a test on the C. W. Whitesell heirs' farm. It will be shot. In Center district, Gilmer County, the same company's test on the John Burk farm is dry in the Big Injun sand. In Union district, Ritchie County, J. T. Locke & Co. completed in the Big Injun sand a second test on the John A. Hall farm. It is a gasser. In the same district, C. S. Morris & Co. have a rig completed on the A. M. Gray farm.

Deep Well Showing for Duster

On the Volcanic tract in Walker district, Wood County, the Hope Construction & Refining Co. has now drilled its No. 4 below the Oriskany sand to a total depth of 5,290 feet. This well was started many months ago, expecting to get a producer in the Oriskany sand. This is the formation in which a previous test got a good showing of oil and a heavy flow of salt water. From caves encountered and other causes the well just completed was delayed many times. Nothing was found in any of the formations drilled through except a little gas in the shale below the Oriskany sand. The only other deep well now drilling in West Virginia is the same company's test on the Gordon farm in Portland district, Preston County. At this test they have only nicely started and do not expect to complete it before next spring or summer.

Drilling and Starting Tests

The Owens Bottle & Machine Co. is due in the sand at a test on the J. B. Hill farm in Lincoln district, Marion County. In Mannington district, F. W. Bartlett has shut down to repair boiler on the W. B. C. Kendall farm. C. A. Snodgrass is fishing on the A. Holbert farm. In Church district, Wetzel County, the Wade Oil & Gas Co. is due in the Gordon sand on the S. M. Shriver farm. In Freemans Creek district, Lewis County, the Crooked Run Oil & Gas Co. is rigging up on the B. L. Krause farm. In the same district, the Carnegie Natural Gas Co. has shut down for orders on the C. B. Bailey farm. In Grant district, Ritchie County, the Carter Oil Co. is due in the sand on the Otho Coleman farm. In Smithfield district Roane County, the same company is fishing at 1,740 feet in the Simmons heirs' farm. In Washington district, Calhoun County, McIntosh & Scott started to drill on the Elmira Watson farm. In Ravenswood district, Jackson County, the Henderson Oil Co. moved tools to a location on the Hugh V. McCoy farm. In Grant district, Ritchie County, Elder & Co. are building a rig on the J. E. Hardbarger farm. In Murphy district, the Chemical Oil Co. is building a rig on the D. M. Miller heirs' farm. In the same district, the Hope Natural Gas Co. has abandoned its location on the F. L. Bush farm.

Gilmer County Tests

In Center district, Gilmer County, the Curtis Oil Co. is building a rig on the Lydia J. McKinney farm. McCall & Co. are rigging up on the Rosie Wilson farm. The Peerless Smokeless Coal Co. is starting on the J. T. McClain farm. In Central district, Doddridge County, Walt Nutter & Co. are drilling on the R. M. Dotson farm. In West Union district, Mrs. Gay Zinn & Co. are building a rig on the Mary J. Mainer farm. In Troy district, Gilmer County, McCall & Co. have shut down at 1,680 feet for orders on the Ellen Carr Farm. In the same district, the Star Oil & Gas Co. is hauling tools to a location on the Clarence Woofter farm. In Courthouse district, Lewis County, the Weston Glass Co. is drilling on the J. E. Crowl farm.

Southwest Pennsylvania

The southwest Pennsylvania fields had very few completions last week. In the Mt. Morris district, Greene Township, Greene County, Jesse L. Garard completed in the Elizabeth sand a small gasser at his No. 40 on his own farm. In Morris Township, the Carnegie Natural Gas Co. has a gasser at a test on the Theodore Day farm. In South Franklin Township, Washington County, the New Oil & Gas Co. has a 2-bbl. pumper on the J. Frank Wilson farm.

In Robinson Township, Allegheny County, the Sutton & Davis Oil & Gas Co. is drilling a test on the Dixon farm. Arbuthnot & Co. are drilling on the Jacob Nolte farm. In Moon Township, the Squaw Oil & Gas Co. is drilling a test on the William McKee farm.

GULF COAST

(Continued from Page 52)

No. 3, south of Crockett, Houston County. No. 1 got salt water and No. 2 lost the drill pipe at 3,000 feet. The Bayshore Oil Co.'s No. 2 Grimes, near La Porte, Harris County, is another location.

In McMullen County, in the Callihan district, the Grubstake Investment Co.'s No. 2 Lark is below 780 feet and casing has been set and cemented at 855 feet in No. 3 Lark. Laughter and Napier set 10-inch surface casing in No. 1 Sitz. Bowers and others are preparing to set 100 feet of perforated pipe in No. 2 Fisher for a test. Dullahan and Foley's No. 1 Callihan is reaming at 1,260 feet.

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Bulletin No. 12 is a catalogue of interest to all oil producers and engineers. Write for it.

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STANDARD BUILDINGS

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Fireproof, Permanent Oil Buildings

Truscon Standard Buildings are ideal for the oil industry because there is nothing about them that can burn. Trusses, side walls, roofs, doors and sash are all of steel. Made of standardized units, they are not only economical in first cost but are easily and quickly erected. They can also at any time be dismantled and re-erected in a new location.

Truscon Standard Buildings are permanent; the side wall panels and roof are manufactured from 18-gauge Truscon Alloy Steel—a material that has proven its superior durability. The maximum of daylight and ventilation is obtained with Truscon Steel Windows.

Typical Truscon Standard Buildings
Lengths: Multiples of 2'. Heights 8'-1" to 21'-8".
Any arrangement of doors and windows.
Lanterns, canopies and lean-tos as desired.

TYPE 1 (Clear Span) with Lantern
Widths: 8'-12'-16'-20'-24'-28'-32'-40'-48'-50'-60'-68'

TYPE 2 (2 Bays)
Widths: 40'-48'-50'-56'-60'

TYPE 3 (3 Bays) with Lantern
Widths: 56'-60'-64'-68'-72'-76'-80'-84'-88'-90'-96'-98'-100'-106'-108'-116'

TYPE 3M (Monitor)
Widths: 60'-64'-68'-72'-76'-80'-84'-88'-90'-96'-98'-100'-106'-108'-116'

SAWTOOTH TYPE
Widths: Any multiple of 28'

Sizes and Types for Every Requirement

The countless combinations of standard units, together with the great number of sizes and types, make each building distinctly individual and exactly fitted to particular requirements. Furnished in pitched, monitor or sawtooth roofs; any arrangement of doors and windows.

Truscon Standard Filling Stations

Fine - appearing, business - getting buildings, Truscon Standard Filling Stations are easily and quickly erected. Can be put up on leased ground with safety because they can be taken down and re-erected with a small amount of labor. Fireproof, permanent, and adaptable to individual requirements.

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The South Texas Oil Co.'s No. 1 Callihan is below 400 feet. Lightfoot and Hill's No. 1 Aycock is around 1,500 feet. A core of the formation is being run in No. 1 Stitz. The Pioneer Consolidated Co.'s No. 1 Martin is at 1,688 feet. Elliott and others' No. 1 Stitz is below 650 feet.

In Live Oak County, the Lobo Oil Co.'s No. 6 Reagan is at 4,120 feet. The Harkey Oil Co.'s No. 1 Herring is around 765 feet. The Grubstake Investment Co. has a location for No. 3 and McCoy and Ross one for No. 3 Murray. The Houston Oil Co.'s No. 3 Cartwright, the big gasser, is shut in.

In Jefferson County, the Houston Oil Co. is starting No. 8 Pipkin, at Big Hill, where it has a small production at present on a partially defined saline dome.

The Southwestern Petroleum Co. set 8¼-inch casing in its test near Garrison, Rusk County. King and others are drilling near Caledonia. Osborne and Osborne have a location for No. 1 Dirgin in that county and the Imboden Oil Co. a location for No. 2 at Pine Hill. The Rusk Oil Co. has a location at Blossom Hill.

The Producers Oil Co., a joint deep test in the old Nacogdoches Field in Nacogdoches County, is around 1,800 feet.

N. LOUISIANA-ARKANSAS

(Continued from Page 48)

Oil Co. is drilling at 850 feet in No. 3 Brown fee, Section 31-21-15.

The Humble Oil Refining Co. is drilling at 2,865 feet in a deep test on the Youree Randolph lease in Section 24-20-15, 5 miles east of Mooringsport. The Louisiana Petroleum Co. is drilling at 800 feet in No. 1 Brewer, Section 33-23-16, 5 miles northwest of Vivian.

De Soto Parish: Ulrey and others are drilling at 625 feet in a test on the Frost Johnson lease in Section 3-11-15, 7 miles east of Logansport.

Red River Parish: Caldwell and others are drilling at 1,630 feet in No. 1 Welch, Section 7-14-10, 5 miles north of the old Crichton district.

Louisiana Wildcats

Bienville Parish: The Ohio Oil Co. is drilling in chalk rock at 2,220 feet in No. 1 Bodcaw Lumber Co., Section 19-16-6, 3 miles west of Bienville and 12 miles south of Gibsland.

Bossier Parish: Perkins and others are trying to reset 6-inch casing at 2,600 feet in No. 2 Vance, Section 18-19-13, 8 miles north of Shreveport.

Skannel and others struck salt water at 2,590 feet in No. 1 fee, Section 22-17-12 and will plug back and try to make a gas well at 2,450 feet. The test is about half way between Shreveport and the Elm Grove gas field.

Morehouse Parish: The Carson Carbon Co. set 8-inch casing at 895 feet in No. 1 Irvin, Section 28-20-5e.

Ouachita Parish

The Fortuna Oil Co. completed No. 1 Cole, in Section 35-20-4, making 5,000,000 feet of gas at 2,170 feet.

Hosterman and others completed No. 1 Collins, Section 31-19-5, making 2,500,000 feet of gas at 2,213 feet.

Ladel and others completed two wells during the week on fee land in Section 29-20-5, No. 17 making 38,000,000 feet of gas at 2,277 feet in No. 18 making 6,500,000 feet at 2,211 feet.

The West Virginia Oil & Gas Co. completed No. 2 West Virginia in Section 4-18-5, making 12,500,000 feet of gas at 2,111 feet.

The Atlas Oil Co. drilled to 3,357 feet in No. 2 West Virginia Timber Co., Section 3-18-5e, and is temporarily closed down.

The Magnolia Carbon Co. is drilling at 70 feet in No. 2 fee, Section 18-20-5. The Peerless Carbon Co. is drilling at 2,220 feet in No. 2 fee, Section 28-19-5. The Southern Carbon Co. is drilling at 600 feet in No. 25 fee, Section 27-19-5, and at 1,625 feet in No. 6 Fairbanks, Section 43-20-5. The Texas-Louisiana Production Co. is drilling at 2,200 feet in No. 3 fee, Section 4-19-5.

The Texas Co. is drilling out plug in 6-inch at 2,156 feet in No. 3 Gibbs, Section 29-19-5, and drilling at 2,170 feet in No. 4, Section 20-19-5. The United Oil & Gas Production Co. is drilling at 2,120 feet in No. 1 Kerr, Section 12-19-4.

Union Parish

Farmerville, the county seat of Union Parish, has become the center of a wildcat campaign which extends over a radius of from 5 to 20 miles east, west and north, and practically covers the entire north half of the Parish.

Cargile and others have derrick for No. 1 Heard in Section 25-21-3w, 12 miles west of Farmerville. Lide and others have derrick up for No. 1 Templeton, in Section 18-23-1e, 14 miles north of Farmerville. McCaldin and others are rigging up to drill No. 1 Templeton in Section 36-21-1e, 5 miles east of Farmerville. The Neddo Petroleum Invincible Corp. is rigging up to drill No. 1 Smith in Section 2-23-3w, 20 miles northwest of Farmerville. The Ohio Oil Co. is rigging up to drill No. 1 Dubach Lumber Co. in Section 15-20-1w, 4 miles southwest of Farmerville. The Roxana Petroleum Corp. has derrick up for No. 1 Smith in Section 30-23-2w, 16 miles northwest of Farmerville. Tarver and others have derrick up for No. 1 Payne in Section 30-21-1w, 6 miles west of Farmerville. Davidson & Palmer have set 6-inch casing in No. 1 Green, Section 19-23-1e, 13 miles north of Farmerville.

The Empire Gas & Fuel Co. is drilling at 3,300 feet in a deep test on the Hamilton lease in Section 30-19-1e, 11 miles south of Farmerville.

The Union Power Co. has four tests drilling on the Union Sawmill Co. lease, 20 miles east of Farmerville and 10 miles northwest of the Monroe gas field.

Webster Parish

In the Cotton Valley district, O'Brien and others are drilling at 1,450 feet in No. 1 Doles, Section 26-21-9.

In the north end of the Parish, the Ohio Oil Co. tested at 2,650 feet, getting 1,500,000 feet of gas, and is arranging to drill deeper. The test is 18 miles east of Plain Dealing.

In the southeast corner of the Parish, the Standard Oil Co. is drilling at 650 feet in No. 1 Woodward & Walker, Section 16-17-8.

Arkansas Wildcats

Clark County: The American Drilling Co. is down 550 feet in No. 1 Wilson, Section 15-8-22.

Jefferson County: Fuller-Draiss abandoned No. 1 Trimble at 2,334 feet, Section 31-5-8.

Lafayette County: The Lewisville Syndicate is down 1,870 feet in No. 1 Osborn, Section 16-15-24, 6 miles north of Lewisville and 16 miles south of Hope, half way between Texarkana and Stephens. L. K. Wilburn and others are down 230 feet in No. 1 Hughes, Section 21-19-23.

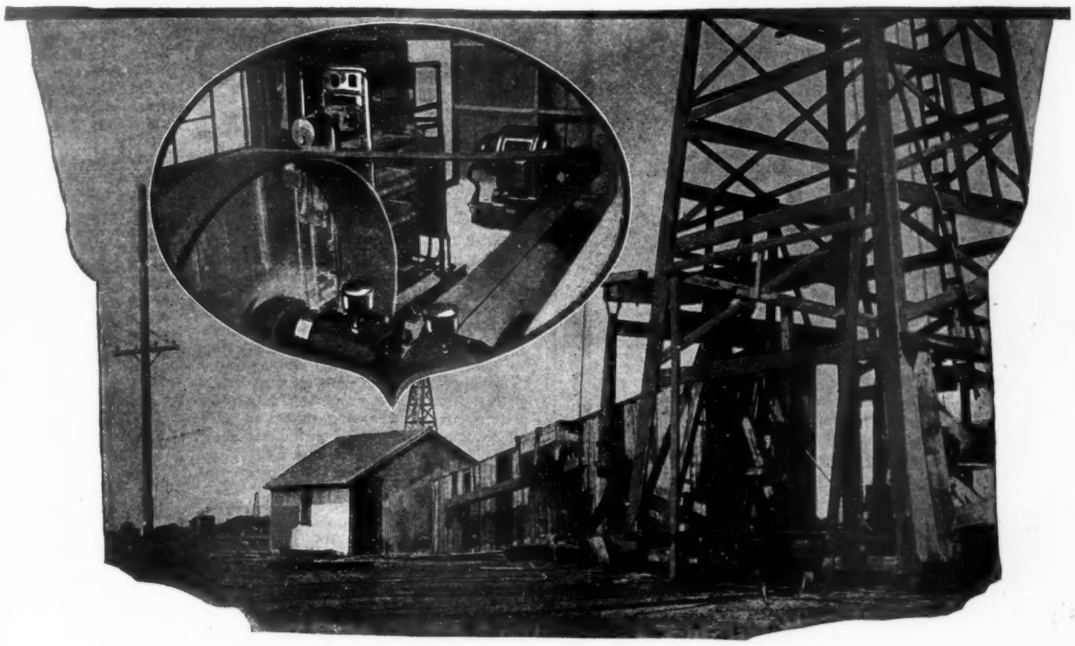
Little River County: Johnson and others are drilling at 1,080 feet in No. 1 Hawkins, Section 10-11-31.

Sinclair Co. Stored 797,270 Bbls. Crude Month of November

The Sinclair Pipe Line Co.'s runs for the month of November from fields in Wyoming, Kansas, Oklahoma and Texas were 1,978,410 bbls. Shipments and deliveries during the same month were 1,181,140 bbls. Stocks of the Sinclair Crude Oil Purchasing Co. in the four States named at the close of November were 41,704,834 bbls.

The company's runs exceeded its deliveries by 797,270 bbls. or an average of 26,576 bbls. per day, which the company put into storage.

The company does not expect to ship Wyoming oil through its Wyoming-to-Missouri line until about mid-summer, and consequently is piling up a lot of stocks in Wyoming. It shipped some oil to its Gulf terminal, including tender shipments from the Powell Field. In Oklahoma and Kansas its runs and shipments were about on a level.



Why Shut Down Your Lease?

Why quit producing for 55 days every year when it can be avoided? Practically every oil operator not yet pumping his beam-wells by electric drive is suffering this loss.

G-E motor drive decreases shut-downs and delays due to engine troubles, and its installation results in an average increase in production of at least 15%. The largest Kansas producer, now operating considerably more than 500 G-E two-speed oil well pumping motors, made this statement:

"Electric motors have more than paid for themselves within six months or a year on account of decreased shut-downs".

G-E two-speed oil well pumping motors have proved their worth in various operations in producing oil, and also in emergency drilling with small tools and in pulling casing. For drilling rigs, however, it is standard practice to use separate electrical equipment, installing a pumping motor as each well is completed.

The G-E oil well specialist in your district will be glad to give you additional testimony and to explain further the advantages of electric motor drive.

Technical papers 503 and 504 mailed on request.

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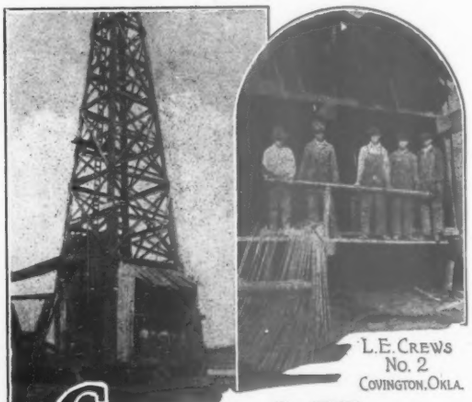


L. E. CREWS
No. 2
COVINGTON, OKLA.

Ground-Hog Days

TRADITION has it that once a year, on ground-hog day, the woodchuck comes out of his hole. But even Johnny Chuck, elusive though he is, comes out with far greater regularity than an Axelson Amco Pump, familiarly known as a working barrel.

The No. 2 well of the Crews Estate Oil & Gas Company on the L. E. Crews Farm, Covington, Oklahoma, used to give Superintendent Williams and Lease Foreman Moore the very devil of a time! There were paraffin and floating sand to contend with, and No. 2 had to be pulled every four or five days, rain or shine.

Various kinds of working barrels were recommended and tried, with uniformly poor results. Of course Frick-Reid representatives at Covington urged a trial for an Axelson Amco Pump, but the price seemed a little high, and everyone was already tired out and skeptical.

But finally, in desperation, an Axelson Amco was run in Crews No. 2—in the early part of last year, it was; March 27th, to be specific.

Five days rolled around, and the Pump was lifting as much liquid as on the first day! A week went by; two weeks; a month; six months! The photographer who had been engaged to get a picture of this remarkable pump at the first opportunity gave up in disgust. He had been commissioned with a fool's errand! He washed his hands of the matter!

Yes, Crews No. 2 has been pulled at last! The photographer refused to believe it, and so the pictures at the top of this page were taken by one of our own men, shooting a small kodak. The well when pulled was making as many barrels as on the first day the Axelson Amco Pump was installed. Paraffin made the job necessary.

In Oil Field Equipment the most HUMAN organization in America

Frick-Reid Supply Co.

Tulsa, Okla. Pittsburgh, Pa.

West of the Mississippi—Stores Everywhere

OIL RESOURCES OF U. S. STILL ENORMOUS

(Continued from Page 40)

and marketers not at all, for few realized what a tiny part of all the oil in a pool was being extracted by wells, and one who is unconscious may bleed to death without being in the least concerned. But now that this present inability to extract more than a pitiful fraction of the oil is realized, it is inconceivable that means will not be devised to take from the ground much of this oil that so stubbornly clings to the rock, for no strong and hungry man will meekly and unquestionably surrender a heaped and savory dish when he has had but a single mouthful.

"There is no apparent reason why the porosity and textures of oil sands, combined with figures of extent and thickness of oil sands, will not permit making estimates of recoverable oil in leases and pools that will be far more accurate than those made by present methods. The advantage coal and iron operators have held in their ability to determine in advance just what tonnage they might expect from their properties has often been remarked. Present methods of making estimates do not give the same advantage to oil operators. One well known and competent geologist in discussing the Huntington Beach Field of California said that he "made an appraisal of the Huntington Beach Field in December, 1921, and, bearing in mind the possibility of lower horizons which at that time had not been penetrated, rendered an estimate which has since proved to be at least 100 per cent too low."

Reserves of oil may never be determined with the same accuracy as those of coal and iron, but the man who maintains the present methods cannot be replaced by others much more valuable and satisfactory would, 50 years ago, have been heard arguing that steel would never take the place of wood for ship building and that the pony express was the last word in fast mail service.

The Oldest Oil Field

The Appalachian oil field embraces all oil pools east of Central Ohio, including those of New York, Pennsylvania, West Virginia, Southeastern Ohio, Kentucky and Tennessee. Nearly all of this petroleum is classed as of Pennsylvania grade, with the exception of some of the oil from a few isolated pools in other States.

This region in general represents the oldest oil field of the world. Most of the pools have long since passed their prime, and in New York and Pennsylvania production is kept alive chiefly by flooding the sands with water, cleaning and deepening old wells or by obtaining oil from shallow sands which were passed by as too small when the wells were first exploited, and wells are still being pumped within a few yards of the original Drake well near Titusville, Pa.

Forty years ago some of the old fields were supposed to be thoroughly drained and ready to be abandoned. Thirty years ago they were certainly not considered in the importance of the industry. Twenty years ago they were just waiting for the last drop to be pumped out. Ten years ago there was not much further hope for any work in them. It is common now to say that this is the last crop of wells in the fields. Ten or 20 years from now the producers will still be drilling the old leases and field production will still be advancing in value as it has been doing for more than three decades.

Flooding of Wells

This method of oil recovery when production by natural methods cease was first introduced in the Bradford, Pa., field, and later in the Cattaraugus County, New York field. The original flooding of wells was in Butler County, Pennsylvania. In this case there was an unobserved flow of oil from a leaking tank into an abandoned well. The weight of the fluid in the hole became effective in forcing oil before it in the presumably exhausted open sand. Wells some distance away were affected. The wise men of the fraternity could not account for the increase in the flooded wells production. An investigation followed. It was then learned about the oil that had been leaking from a tank unknown to anybody, into the hole. This was the first time when that sort of pressure attracted attention. Later, the flooding idea, water being the fluid used, became common in usage. P. M. Berwald, one of the "old timers" and a thoroughly experienced oil operator thus describes the "modus operandi":

"It has been known for some time that where wells have been pulled out and improperly plugged that the water from the upper strata of rock has flooded the oil stratum, thereby putting a hydraulic pressure on the oil-bearing level forcing ahead the oil that is left in the sand and along lines of least resistance to other wells that are producing in close proximity, thereby increasing the flow of oil and gas in these wells for a period of time until the water reaches them, at which time they are abandoned.

Flow Travels Slowly

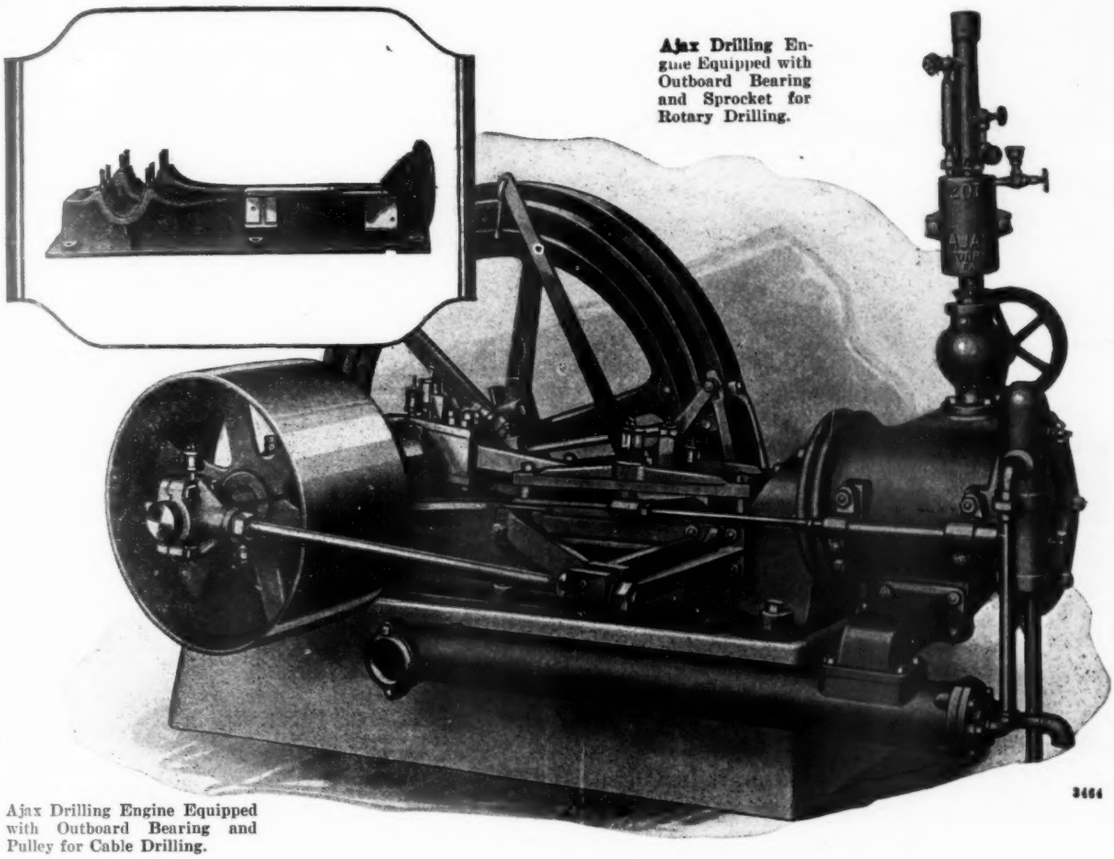
"This flow of water travels at various speeds, controlled by the porosity of the sand, and will average from 60 to 100 feet a year. As the distance increases from the hole which is supplying the water, the rate of travel of the flood materially decreases as the years pass, unless the volume of water is increased by an additional flow from other wells pulled out and not plugged. The method, to my best knowledge, is to clean out an old well in the center of the lease and to pipe the water into the hole; also removing the casing and allowing a large flow of water into the sand. Generally a well is selected of a depth not under 1,600 feet, which gives a hydraulic pressure if the well were full of water to the top of about 800 pounds to the square inch on the surface of the sand. This pressure being greater than the original rock pressure or gas pressure at the wells it travels much more rapidly through the sand than from a well of lesser depth.

"After this has been accomplished, the producer starts ahead 100 feet, or such a matter, and drills a new hole, from which he produces the oil flooded to it. When this well "waters out," which it will do from one to three years, he pulls the casing and allows more water to flow into the oil sand and keeps drilling ahead of the flood. In this way wells that would not do over one-eighth of a barrel naturally, have been known to produce as high as 30 to 40 bbls. a day for a period of two or three years."

W. L. Russell of the New York State Geological Department, says there seems to be no doubt that the quantity of oil which will be obtained from flooding is vastly greater than could be obtained by simply pumping the wells, even allowing for still undiscovered pools. The amount of oil which may be extracted from an acre by flooding depends on the thickness of the oil sand. Some highly successful floods have extracted 10,000 to 12,000 bbls. per acre, but in these cases the sand was about 40 feet thick and very rich. A fair guess as to the yield of a 20-foot sand would be 5,000 bbls. per acre, but this means 20 feet of good pay sand. The average yield per acre depends on the average thickness which is hard to estimate, for many well logs classify shale breaks and parts of the sand too hard to produce oil as oil sand. The average thickness is probably about 20 feet, but may be as low as 15. Assuming the average thickness is 20 feet, the average yield per acre should be about 5,000 bbls., and the total yield for the whole field something like 300,000,000 bbls.

Owners Enriched

In the 65 years of development in the Appalachian oil fields no pool has been entirely abandoned as exploited. A few years ago the Angel Oil Co., operating



Ajax Drilling Engine Equipped with Outboard Bearing and Sprocket for Rotary Drilling.

Ajax Drilling Engine Equipped with Outboard Bearing and Pulley for Cable Drilling.

Replacement Parts in Every Oil Field

Fifty years in the oil fields all over the world has proven that 100% service on replacement parts is necessary for quick, speedy drilling.

Genuine Ajax replacement parts are interchangeable. Operators in the field have found that the interchangeability of parts saves much time in drilling.

Realizing that time means money, the National Supply Companies carry a complete stock of genuine Ajax parts in every oil field.

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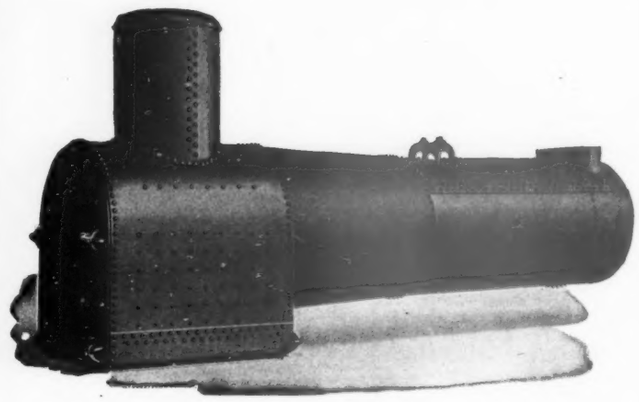
Insist on Genuine Ajax Replacement Parts



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in the Bradford, Pa., oil fields, passed into the possession of the sixth purchaser from the time of the first sale by the original owners. Each purchaser together with associates were enriched, and when the property last changed ownership the forunate seller realized a higher price for the property than any of his predecessors. This was duplicated in the case of the owner of a property who resorted to the flooding process. When three years elapsed after the water had been let into an old well without appreciable results, the owner sold the property, feeling that his efforts had been futile. The purchaser pumped the wells at a small profit for several years, then being alarmed by the rapidly increasing production of two old wells, and having the common fear of flood, he sold out at a fair profit. The new owners for several years reaped a harvest in the operation of the property. Then, fearing disaster they sold out at an increase of 25 per cent above the purchase price. This occurred in 1903, since then the property has three times changed hands, and could now be readily sold at a larger figure than was received for it 27 years ago. It is reported about one-third of this property remains unflooded.

If this or a similar method can be successfully applied in the oil producing regions west of the Mississippi River, particularly in the eastern Kansas and Oklahoma oil fields renewing the life of thousands of wells that new yield a negligible quantity, would not only enrich the owners but would make a valuable contribution to the many small refineries dependent on the output of these regions insuring steady operation of their plants.

WASTED RESIDUE NOW SOURCE OF REVENUE

(Continued from Page 36)

a pipe line west from Fort Worth to the Ranger locality. It is reported that next season this line may be extended to Breckenridge. The main stem of this line is 18-inch pipe. A number of compressor stations have been built and residue gas on a large scale will be marketed from the Ranger district.

Commercial Utilization

There are occasional local examples of commercial utilization of residue gas for other purposes than operating oil properties. For instance, the large central electric power station at Leon Lake, near Eastland, Texas, of the Oil Belt Power Co., is operating entirely on residue gas as fuel.

The present day methods of extracting casinghead gasoline involve compressing the casinghead gas and discharging the residue at a considerable pressure which will usually be somewhere between 15 and 50 pounds. Thus as long as the casinghead gasoline plant continues in operation, whatever residue gas it may have for sale will be available at a predetermined pressure. The gas distributing system can give preference to residue gas because each casinghead gasoline plant acts as a field booster to deliver the residue gas to the pipe line booster station which latter raises the pressure to pipe line pressure.

The owners of the casinghead gasoline plants will do all possible to secure additional gas to offset any decline as on their activity in this respect depends the life of the casinghead gasoline operation. There is, therefore, an element of stability in the supply of casinghead residue gas which is of importance to the gas distributor.

Residue gas often has a high fuel value. Much residue gas has a fuel value of 1,400 to 1,500 B. T. U. per cubic foot as compared with about 1,000 B. T. U. for dry natural gas. This high fuel value is explained in a general way as resulting from the selective nature of the gasoline extraction process. There are left in the residue a group of hydrocarbons having a much higher fuel value than the hydro-carbons removed in the gasoline. The higher fuel value of residue gas does not appear to be given consideration in fixing the price paid for it although it is undoubtedly an advantage to the ultimate consumer to receive 40 or 50 per cent greater heating value when burning residue gas than when using dry natural gas.

Price Varies

The price paid to casinghead gasoline plants for surplus residue gas appears to vary somewhat. It is reported to range between 3 and 6 cents per 1,000 feet. When residue gas is boosted to pipe line pressure before being sold, it is reported to take a considerably higher price, say 10 to 12 cents or more. Of course, a royalty has to be paid out of the price received for the gas. This royalty is paid by the owner of the casinghead gasoline plant to the owner of the oil lease who in turn has to pay a smaller royalty to the owner of the fee. There are some exceptions to this where the gas rights are owned separately from the oil rights as in some parts of the Osage.

This large scale utilization of residue gas is a step toward conserving our resources of natural gas. For instance, in the Burbank Field a large volume of dry gas already drilled in is being held for the future. These dry gas wells are closed in, awaiting the time when the casinghead residue gas is no longer available or is insufficient. If similar conservation could have been practiced in the past in the Cushing and Glen Pool oil fields where hundreds of millions of feet of gas were blown into the air and wasted, a corresponding amount of dry gas might have been conserved for future use in Tulsa and other cities.

WISH TO REPEAL ACT ON RED RIVER LEASES

WASHINGTON, D. C., Dec. 31. — A movement is to be begun on the reassembling of Congress to repeal the Watson law, which authorized the leasing for oil and gas of the land in the south half of the Red River bed. The bill gave preferential rights in the making of leases to those who had actually developed claims and produced oil or gas.

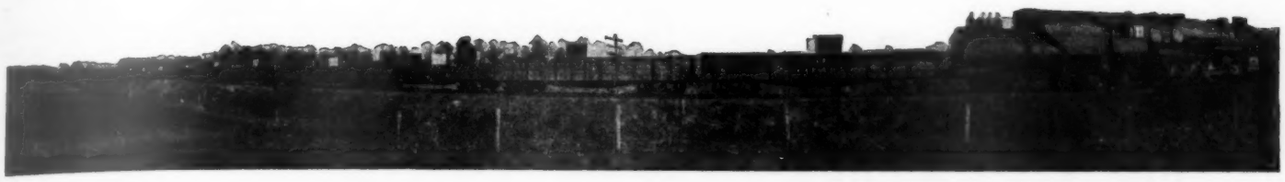
It was considered by the house committee on public lands for many months and was amended till it finally seemed satisfactory to all claimants with the exception of L. M. Gensman, then a member of the house. Every member of the Oklahoma delegation supported the bill and Gensman's opposition was not because of the manner of making leases but because it did not recognize what he considered the rights of certain Oklahoma Indians to the property.

Opposition to the act which threatens an effort to repeal it, is based on an adverse report of the attorney-general made and considered last year when the bill was up. Members interviewed did not think there was much probability that the Watson act would be repealed. Meantime, the general land office is having a hard time trying to straighten out the conflicting claims to leases in the property. It probably will be a good while before the interior department is ready to award the leases, for which applications were filed six months or more ago.

OSAGE INDIANS ASK LEASE SALE FEBRUARY

PAWHUSKA, Okla., Dec. 29.—The first step toward holding what may be the largest Osage Indian oil lease sale in history was taken when the Osage Indian council adopted resolutions addressed to the Secretary of the Interior seeking an order for the sale of 100,000 acres of oil leases on February 19 and 20.

Such a resolution is the usual method by which the Osages obtain orders from the secretaary for lease sales.



When Powell Broke Loose

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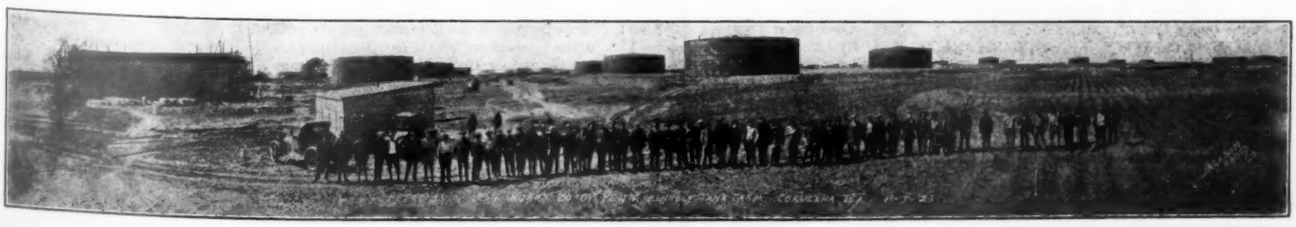

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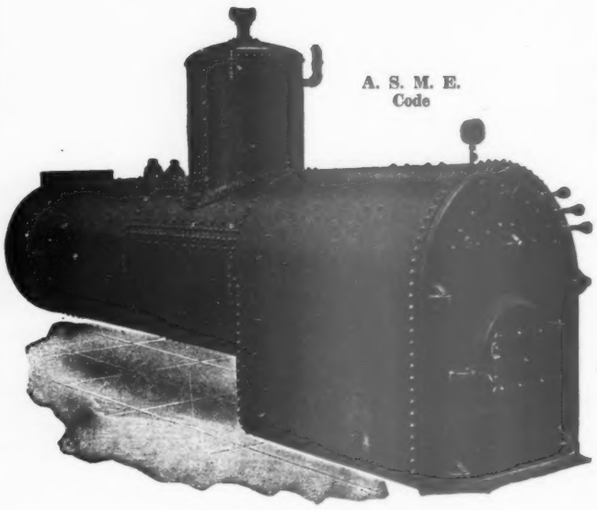

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Fort Worth, Texas—Longhart Supply Company.

PETROLEUM EVAPORATION LOSSES CAN BE EFFECTIVELY REDUCED

Evaporation losses of petroleum stored on the producing property, which run into enormous figures, can be effectively reduced by the use of gas-tight storage tanks, states the Department of the Interior, as the result of experimental work performed by the Bureau of Mines. It is stated that under present average conditions in the Mid-Continent Field, approximately 6.5 per cent of the oil produced is lost by evaporation, 3.5 per cent occurring on the lease, and 3 per cent in transportation. A loss from well to refinery as high as 9.3 per cent in less than 10 days has been observed. Counting the time that oil is held on the lease, in the pipe line, in storage tank farms, and in refinery storage, the average time elapsed between the well and the stills at the refinery is nearly 5.1 months. For some methods of handling oil the "well to refinery" evaporation loss will be 12 or 15 per cent of the crude produced at the well.

The Bureau of Mines estimates that the amount of oil saved from evaporation by making lease tanks gas tight will pay for the installation of the necessary equipment in from 30 to 90 days, with crude oil selling at $2 per barrel. Widespread adoption of evaporation proof tanks has been delayed by the failure of production managers to realize, first, that their evaporation losses are enormous, and, second, that these losses can be practically eliminated at a relatively small cost.

Gasoline can be profitably extracted from crude on the lease by running gas from the wells through the flow tanks and recovering the gasoline by passing the vapors through a gasoline plant.

Gasoline may also be extracted from crude on the lease by pulling a vacuum on the oil and gas separator and passing the vapors through a gasoline plant. Appreciable amounts of gasoline can be obtained by pulling a high vacuum on the oil and gas separator, particularly during warm weather.

A small condenser installed at a plant will save considerable gasoline and will pay for itself within a short time if oil is dehydrated at temperatures of 130 degrees F. and upward. This system is recommended only if no gasoline plants are located near the dehydrator.

A number of conditions should be carefully studied before tanks are insulated to reduce evaporation losses of crude oil or gasoline. The use of insulating material may be recommended if the products are very volatile, such as unblended compression natural gas gasoline, but it is questionable if it would be economical to insulate tanks used for storing products which have vapor pressures considerably below atmospheric storage temperature.

A method should be devised for minimizing evaporation losses while the tanks are being filled and emptied; for, since the oil must be measured at intervals along the main lines, pipe line losses will be considerable even if gas tight tanks are installed. The loss in one pipe line system 120 miles long amounted to 0.94 per cent of the crude handled. In another pipe line system 210 miles long the loss amounted to 1.56 per cent.

If the more volatile fractions are retained in the crude by use of gas tight tanks on the lease, pipe line losses will be higher than at present, unless additional precautions are taken. If, on the other hand, a small percentage of the gasoline is extracted from the crude on the lease, storage and transportation losses will be less than at present.

The handling of crude oil from well to pipe line in the future will, it is believed, involve the installation of the following equipment: (1) Gas traps for separating the permanent gas from the oil at pressure above atmospheric, (2) really tight flow or separating tanks, and (3) tight stock tanks. If this procedure is followed, methods for reducing pipe line losses must be devised.

STANDARD CO. MAY BUY INDIAN REFINING CO.

Negotiations are reported in progress for the acquisition of the Indian Refining Co. by one of the Standard Oil companies. Indian Refining owns producing properties, a 10,000-bbl. refinery at Lawrenceville, Ill., 1,500 tank cars and an extensive system of marketing stations, which are sought by the larger company. Indian is one of the oldest independent companies.

READER SUGGESTS REGULATION TO PREVENT TOWN-LOT DRILLING

December 20, 1923.

The Oil and Gas Journal,
Tulsa, Okla.

Gentlemen:

Enclosed find my check for $6 for one year's subscription to The Journal from the expiration of my present subscription.

I would not care to try to keep abreast of a business of such magnitude as the oil business has come to be without the assistance of your valuable paper.

I have read with a great deal of interest your editorials in regard to probable regulation of the industry and sincerely hope that the good sense and judgment of our National Congress will prohibit them doing anything detrimental to the industry.

However, there is one regulation which, after viewing the town-lot development from the days of the McDonald development in southwest Pennsylvania to the hectic town-lot drilling that we have witnessed in the three major pools south of Los Angeles, Calif., it seems to me that if the different States where oil is produced were to pass a law prohibiting the drilling of more than one well to five acres that it would be a true conservative measure and save the legitimate operator and the industry millions of dollars each year, and would do away with a great deal of the unscrupulous promotion business tht has cursed the industry from its birth.

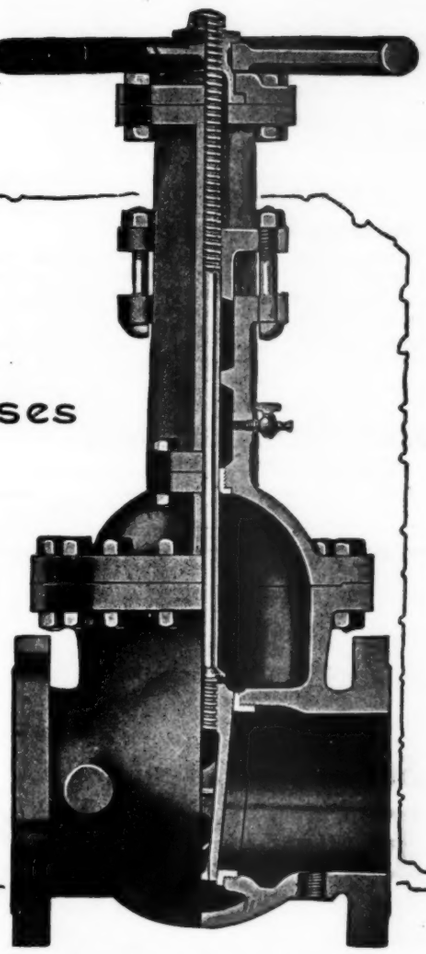
I realize that this would at times work a possible hardship in some instances, but they would be so rare and the benefit to the industry as a whole would be so great, that it is well worth while.

Wishing you the best of success, and with the usual Christmas greetings, I am,

Respectfully yours,
C. O. INGLEFIELD.

December 20, 1923.
4254 Hawk St., San Diego, Calif.

CHAPMAN



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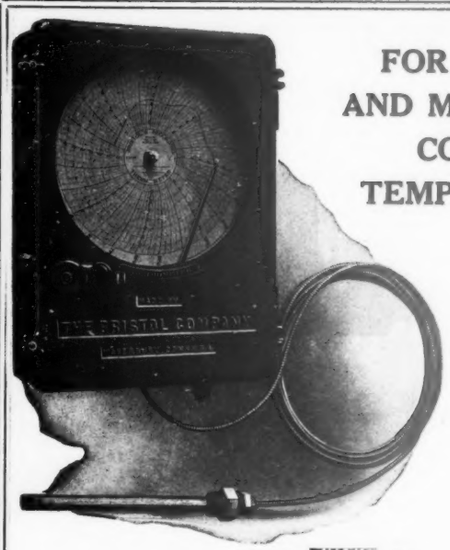

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Bottom Water More Easily Plugged Than That in an Oil Sand

The need for plugging off bottom water or water in an oil sand frequently confronts producers. Water from either source may cause loss of oil and gas. As the practicability of shutting off such water is often worth determining, a brief description of some of the methods commonly used is included.

Bottom water can be plugged off more easily than water in the sand, according to the United States Bureau of Mines, because the break that separates true bottom water from the productive sand furnishes a means of completely excluding the water. When water is coming through the oil sand, it can seldom be plugged off permanently, because there is no break or impervious formation to aid the plug in holding the water back. Moreover, water coning probably starts as soon as an oil well drilled into the water-bearing part of the sand begins to produce. To shut out the water after coning has started requires a plug reaching higher into the sand than the normal water level; such a plug in turn may reduce the production of oil.

Under most conditions cement is the best material for plugging off both bottom water and water in the sand, although other methods are sometimes more satisfactory for shutting off water.

Cement has the advantage of flowing rapidly, thus filling all irregularities in the wall of the hole. Under favorable conditions it makes an excellent bond with the walls of the hole. A cement plug is usually adapted for plugging holes that have been shot because it fills the irregular shot hole more satisfactorily than any other plug. Moreover, a cement plug of any desired length can be placed quickly and cheaply. The only delay occurs while the cement is setting, and that is only about 10 days.

Cement may be placed in a well by a dump bailer or by the tubing method. Gas, moving waters, or waters under high pressure may cause trouble by preventing cement from setting or by channeling through a cement plug before it takes initial set. There are several ways of reducing these movements of gas or liquid, or "killing the flow"; they include mudding prior to cementing, placing cement in the well in canisters or sacks and breaking the containers by running tools on them, permitting the water to reach its natural level before a job is started, and plugging part way with other materials to cut down the flow of the water long enough to permit the cement which caps the plug to set.

The tubing method of cementing off bottom water has been used with fair success at various times. It has been successful in wells where gas keeps the fluids agitated and is also suited to jobs that take large amounts of cement.

Plugging With Lathe Cuttings

Lathe cuttings lowered into the well in 4-foot canisters of thin sheet iron, just small enough to pass freely through the casing have been successful in some Kansas fields for plugging off water occurring in the same formation as the oil. A canister is lowered on a string of tools and then "run on" until it is tamped down. A 4-foot canister may tamp down to a plug 6 inches or 1 foot in height, depending on the size of the cavity in the well and the character of the formation, and under extreme conditions it may not fill up the hole at all. After a few canisters have been run, the number depending on local conditions, a bailing test may be made to determine if the rate at which fluid comes into the hole has decreased. When, in the judgment of the operator, the greatest amount of water has been shut off with the least amount of oil, a solid lead plug is usually lowered and driven with the tools to cap the plug of lathe cuttings. The advantages of this method are that it can be used in wells where cement will not set. Moreover, the plug can be driven to the exact level that will give the best results. Experience has shown that sometimes this level is a matter of inches, too much plug cutting off the oil and too little not decreasing the water enough.

Lead Wool

Lead wool is sometimes used to plug off bottom water. A few hundred pounds of the wool is placed in the bottom of the hole and tamped into a solid mass with a flat-bottomed bit. The loose spongy wool as it consolidates is forced into the irregularities of the wall of the hole. If the first plug does not shut off the water, more wool can be added and tamped. After water is shut off with lead wool, it is good practice to cap the lead with cement, if there is room, and thus insure a more durable plug. By the use of lead wool, a flow of water in excess of 5,000 bbls. per day, with a gage pressure of over 150 pounds per square inch at the casing head, was recently shut off in a well in Cat Creek, Mont.

Mechanical Plugs

A number of mechanical plugs are made for plugging off bottom water. They are variously known as bottom-hole plugs, rubber plugs with wood mandrel, solid lead plugs, lead plugs with mandrels, lead and rubber plugs with mandrels, limit plugs, and spiral plugs. When circumstances favor their use these plugs are often effective. It is almost essential that they be set in hard formations and in holes that have not been shot, otherwise tight bonds between the plugs and the walls of the hole can not be effected.

Testing Water Shut-Offs

In the prevention of underground loss of oil or gas, probably no measure is more important or is more frequently neglected than the testing of water shut-offs. Experienced operators realize the need for shutting off water before drilling into the oil sands and often spend considerable time and money to accomplish it, yet fail to test the effectiveness of the shut-off. Unless a careful test is made, a leak around the shoe or in the casing may not be detected. Such a leak can often be repaired easily before the well is drilled in, but if not repaired at that time may become a serious problem and cause much damage later.

The ordinary test of water shut-off consists of two tests, one for casing leaks and one for leaks around the shoe.

OUR LOW PRICES AID GERMAN OIL IMPORTS

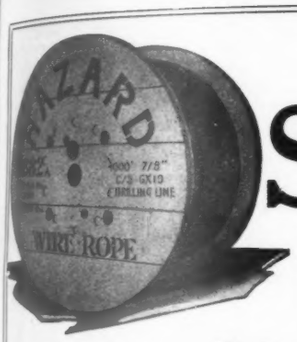
The imports of petroleum products into Germany during September and October maintained the 1923 monthly average, probably due to the reduction in American prices.

The imports for the first eight months of 1923 indicate, however, that Germany's chief bulk imports—lubricating oils and illuminating oil—show a marked decrease as compared with the same period in 1922. The imports totaled only 100,901 tons of lubricating oil in the first eight months of 1923, or about 54 per cent of the 202,978 tons imported in the same period of 1922. The United States furnished about 82 per cent of the 1923 total, and 83 per cent of the total in the 1922 period.

Illuminating oil imports in the first eight months of 1923 amounted to 57,997 tons, or 32 per cent of the total in the previous year. Of the 1923 amount the United States furnished 78 per cent, and about 73 per cent of the 1922 figure.

Imports of heavy benzine and gas oil, however, show an increase over the eight months period of 1922. Only one-eighth of the 42,224 tons of heavy benzine imported came from the United States in 1923, as compared with about the same proportion in 1922.

Imports of gas oil totaled 50,040 tons, of which over 60 per cent were from the United States, against about 54 per cent of the previous year's total.



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KANSAS FIELDS

(Continued from Page 54)

new location for No. 1 Porter, CEL SE SE, Section 11-29-8. Mitchell and others had a rig in place for No. 2 Perkins, C SE SE, Section 33-29-9, and Hunt & Croff also had a rig built on a new location in the CEL SE SE, Section 18-39-9.

Greenwood County

In Greenwood County, Polhamus and others were drilling at 400 feet in their No. 1 Marshall, SE cor. SW, Section 27-24-9, and Roth & Farout were fishing at 500 feet in their No. 1 Welch, NW cor. NE, Section 14-25-8. The Magnolia Petroleum Co. was spudding its No. 1 Kleine, SW cor. Section 21-26-9, and had a rig in place for its No. 1 Kuhn, NW cor. SE SW, Section 28-26-9.

A 40-quart shot made a 40-bbl. producer out of D. A. Weiss and others' No. 2 Leedy, SW cor. NE NW, Section 31-22-10, from sand at 2,557-83 feet. Some water was coming from the bottom. The Great Southern Petroleum Co. also made a small producer by shooting No. 3 Thrall, SW cor. NW, Section 28-23-10, with 75 quarts in sand at 2,358-83 feet, the result being a 25-bbl. well. The Mission Oil Co. likewise shot its No. 1-B Thrall, NE cor. Section 27-23-10, with 160 quarts in sand at 2,262-2,342 feet, and it made 35 bbls. of 40 gravity oil. The same company's No. 2 Tucker, NE cor. SW, Section 22-23-10, was dry and abandoned at 2,300 feet.

The Phillips Petroleum Co. had a rig on the ground for No. 5 Edwards, C NW NW, SE, Section 13-23-10, and John Rogers and others had a rig built for their No. 1 Lewis, SE cor. SW NE, Section 11-24-9.

Winters & Harwood abandoned their No. 1 Clark, C SE SE SW, Section 2-25-8, as dry at 2,461 feet, after getting a small show of oil at 2,390-98 feet.

A rig was in place on a new location made by the Cosden Oil & Gas Co. for No. 9 Griblin, CSL NW, Section 21-23-13, and also for Rodgers and others' No. 1 Aagard, NW cor. SW NE, Section 14-24-9, offsetting the new producer in that field. Bason, McGinnis and others were moving in timbers on their new location for No. 2 Aagard, NE cor. SE NW, Section 14-24-9, and Rodgers and others also had timbers on the ground for their No. 2 Bratton, CWL NW NE, Section 14-24-9. Rigs were up for Polhamus and others' No. 4 Dibert, CSL SE SW NW, Section 3-25-9, and for the Pure Oil Co.'s No. 3 Henley, NE cor. NW SE, Section 4-25-9. Bason and others' No. 1 Robson, NE cor. SW NW, Section 14-24-9, was also a rig. Roth, Winters and others located No. 2 Teichgraeber, NE cor. SW, Section 11-25-8.

A 200-bbl. producer was brought in east of Newton in Harvey County by Mason and others, their No. 1 Conway, in the NW cor. SE. Section 4-23-2, having found pay sand at 2,440 feet and drilled 2 feet in. Considerable water was coming from above.

OKLAHOMA FIELDS

(Continued from Page 42)

the Prairie Oil & Gas Co. was running the 8-inch casing at 2,295 feet in its No. 1 Hobson, CEL NE SE NW, in the same section.

A location was made in the NE cor. SE, Section 10-27-5, for the Phillips Petroleum Co. and Delmar Oil Co.'s No. 6, and their No. 1, SE cor. Section 10-27-5 was shut down at 3,025 feet. The Twin State Oil Co.'s No. 7 McCassey, CSL SE SW NW, Section 15-27-5, was also shut down at 2,470 feet with the 8-inch casing set at 2,525 feet. Danciger and others are pulling the big pipe preparatory to shutting down their No. 6 Thompson, C NW SE SW, in the same section. The 6-inch casing was set at 2,775 feet and the hole was carried to 2,825 feet.

The Carter Oil Co. is drilling by a string of tools at 1,120 feet in its No. 16, C SW NE NE, Section 22-27-5, and the Skelly Oil Co. and Phillips Petroleum Co. shut down their No. 6 Thompson, CEL NE SW NW, Section 22-27-5, at 940 feet.

A broken beam caused the temporary shutting down of Waite Phillips' No. 1 Wildy, SE cor. SW, Section 33-28-5, at 240 feet. The Prairie Oil & Gas Co. was drilling its No. 1 Morgan, SW cor. SE, same section, at 235 feet.

In northeastern Kay County, the Galvez Oil Co.'s No. 1 Bellmard, SE cor. NE SE, Section 33-29-5, was dry and abandoned at 3,345 feet.

In the Burbank, the Mid-Kansas Oil & Gas Co. was spudding its No. 13, CSL SE SW SE, Section 35-27-5, and Peters and others were rigging up No. 2, CEL NE SE NW, Section 17-27-6. The Sinclair Oil & Gas Co. had a rig built for its No. 14-A, CEL SE NE NE, Section 19-27-6.

In Creek County, Bartlett & Mann were drilling at 450 feet in their No. 2 Bruner, SW cor. NW SW, Section 11-19-8. The Shaffer Oil & Refining Co. had a rig in place for its No. 4 Smith, NW cor. SE, Section 15-19-9, and shut down its No. 1 Manley, CSL SE NE SW, same section. The rig erected by the same company for No. 1 Manley, CNL NE NE SW, was abandoned.

Okmulgee County

In Okmulgee County, a well making 125 bbls. natural was brought in by Jordan & Ashley in their No. 1 Hardridge, SW cor. SE NW, Section 32-14-14, sand having been found from 1,193 to 1,212 feet. Another producer good for 50 bbls. natural became good for 55 bbls. as the result of a 5-quart shot in sand at 2,528-57 feet. It was E. R. Black's No. 2 Murrell, SW cor. NW NW, Section 26-13-11. C. E. Campbell had 2,000,000 feet of gas in his No. 3 Sampson, CNL SW NW, Section 30-13-15, from sand at 2,812-45 feet. E. Price plugged his No. 6 Conner, NW cor. Section 6-14-15, from 1,601 feet back to the sand at 1,481-1,501 feet, which contained 1,000,000 feet of gas.

H. E. Hazlett abandoned his No. 2 Durant, NE cor. SE NW, Section 27-14-15, as dry at 1,859 feet. Calhoun & Hullenberger also had a duster in their No. 4 Hallerman, CSL SW SE, Section 31-13-13, at 3,042 feet, and H. P. Stanford's No. 3 Nero, SE cor. NE NW, Section 36-14-13, was dry at 2,685 feet.

Carpenter and others were spudding their No. 2 Perryman, NW cor. NE SW, Section 32-14-14, and the Gladys Belle Oil Co. was drilling its No. 6 Bruner, CEL SE SE, Section 36-13-11, at 300 feet.

Wewoka District

In the Wewoka district, the Producers & Refiners Corp. brought in the twenty-second producer in that pool, its No. 2 Hall, CEL SE SW NE, Section 32-8-8, making 75 bbls. natural the first 24 hours from sand at 3,131-51 feet, and increasing to 200 bbls. after a shot. The Magnolia Petroleum Co. was spudding No. 3 Parker, C SW SE NW, Section 33-8-8, and the Dixie Oil Co. had a rig in place for No. 3 Foster, SW cor. SE SW, Section 28-8-8, and was drilling at 570 feet in No. 2 Foster, C SE SW SW, same section.

The Dixie Oil Co. was building a rig for No. 1-A Irving, CWL NW SE SE, Section 18-8-10, Hughes County, and W. C. Newman was spudding his No. 1 Scott, SW cor. Section 31-8-12.

Otstot & Polin found a sand at 3,450-75 feet in their No. 1-A, NW cor. NE SW, Section 15-27-1w, north of Tonkawa in Kay County, and it produced 40 bbls. of oil and 20 bbls. of water.

In the old Robberson Field of Carter County, the Magnolia Petroleum Co. found a couple of sands at 2,207-25 feet and 2,235-61 feet that were good for 250 bbls. and was drilling ahead in No. 2 Lahman, SE cor. Section 23-2s-3w. The Schermerhorn Oil Co.'s No. 3 Holman, C SW SW SE, Section 24-2s-3w, made 687 bbls. from broken sands from 1,955 to 2,282 feet. Total depth was 2,310 feet, with a show of oil from 2,282-94 feet, in brown shale. The same company's No. 2-B Holman, CNW NW NE, Section 25-2s-3w, flowed 90 bbls. in 35 minutes after starting with the swab in broken sand from 2,155 to 2,304 feet. Total depth was 2,386 feet and the well was estimated to be good for 200 bbls. The Schermerhorn Co.'s No. 4 Holman, CNW SW SE, Section 25-2s-3w, was drilling at 142 feet.

Graham Area

The same company's No. 4 Sparks, C SW NW SW, Section 30-2s-3w, in the Graham area, was making 275 bbls. from broken sand at 2,310 to 2,396 feet. No. 1 Sparks, C NW NW SW, same section, was running the 6-inch casing at 2,580 feet, with broken sand from 2,541 to 2,585 feet good for 50 bbls. production. No. 7 Sparks, owned by the Schermerhorn Co., C SE NW SW, in the same section, had 41,000,000 feet of gas from broken sands from 1,905 to 2,136 feet, and had the 8-inch casing set at 1,777 feet. Total depth was 2,174 feet. A rig was in place for No. 8 Sparks, C NE SW SW, Section 30-2s-2w.

The Cotton Belt Petroleum Co.'s No. 2 Ellis, C NW SW NW, Section 30-2s-2w, was a 300-bbl. producer from sands at 2,330-45 feet. A gas sand was encountered above the oil pay from 2,315 to 2,330 feet. The same company's No. 5 Ellis, C SE NW NW, in the same section, was good for 150 bbls. from sand at 2,428-57 feet.

Hewitt Field

In the Hewitt Field, the Sure Oil Co. was swabbing 300 bbls. from its No. 11 Vorhees, C SW, NW SE, Section 9-4s-2w, sand having been found at 2,270-90 feet. Westheimer's No. 15 Kalosh, CEL SW SE NE, Section 16-4s-2w, was making 100 bbls. from sand at 2,586-90 feet. Westheimer's No. 16 Fee, NE cor. SE, Section 16-4s-2w, was drilling at 816 feet.

Two gassers were brought in in the western part of Grady County, Stogner and others' No. 1 Chandler, C SW NE NE, Section 23-5n-8w, being estimated as a 15,000,000-foot producer from sand at 1,316-78 feet, and the Nichols Drilling Co.'s No. 1 Bray, C SE NE NW, Section 2-4n-8w, being estimated at 11,000,000 feet from sand at 1,421-48 feet. Both wells are shut down.

In northwestern Cotton County, Carter and others of Galveston, Tex., were rigging up rotary tools for their No. 1 Dwyer, in the NE cor. SE, Section 28-2s-13w.

Creek County Gasser

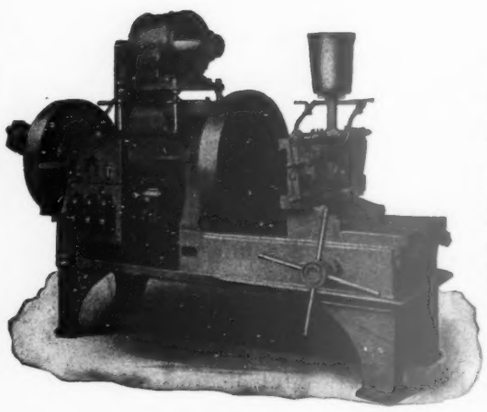
Creek County was quiet. Sharples and others shut down their No. 1 Dunn in the NW cor. Lot 18, Section 19-19-8, at 1,775 feet. The Hepworth Oil & Gas Co.'s No. 1 Mattie Bros., NE cor. NW, Section 33-19-9, was drilling at 1,600 feet.

A 12,000,000-foot gasser was brought in by C. P. Davis in his No. 3 Big Mosquito, NW cor. SE, Section 19-17-9, sand having been found at 2,607-81 feet. The Pure Oil Co. was spudding No. 2 Wright, NW cor. SW NW, Section 19-17-9. A duster was abandoned by Jackson & Wise, their No. 1 Grayson, SE cor. Section 17-16-9, being dry at 3,013 feet.

A good strike was made by the Phillips Petroleum Co. in No. 5 Canada, NE cor. SW SE, Section 14-16-8, when it found the pay sand at 3,185 feet and responded with 315 bbls. natural production drilled 3 feet in. The Lorraine Petroleum Co. was drilling at 275 feet in its No. 11 Deere, NW cor. SW NE, Section 23-16-8, and the Wolverine Oil Co. was spudding its No. 1 Scott, NE cor. NW SW, Section 28-16-8. The Bu-Vi-Bar Petroleum Co. and Carter Oil Co. had a rig on the ground for their No. 1 Williams, NE cor. SE, Section 24-17-8, and the Roland Oil Co. was spudding No. 1 Morrison, SE cor. Section 25-17-8.

The Sinclair Oil & Gas Co. will plug its No. 1 McGilbray, SW cor. NE NE, Section 30-14-8, total depth now being 2,905 feet. The Cosden Oil & Gas Co.'s No. 1 Warnakee, SW cor. NW SW, Section 15-15-8, was good for 10 bbls. natural from oil sand at 3,391-3,401 feet. A gas sand was found just above the oil pay, from 3,387 to 3,391 feet. Kline, Brann & Shaffer were swabbing 8 bbls. from their No. 3 Warnakee, NW cor. SW SW, Section 15-15-8, sand depth at 3,391-97. The Schermerhorn Oil Co.'s No. 1-A Wilson, NE cor. Section 22-15-8, was no good and was abandoned

Pipe Cutting and Threading Machinery



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WARREN B. REED
CONSULTING ENGINEER
MORGAN CITY, LA.

April Fourth, 1923.

Reed Roller Bit Co.,
Houston, Texas.

Gentlemen:-

In reply to your inquiry regarding our practice of drilling new hole with a Reed Reamer carried above Fish Tail Bit, will state that this method was given a thorough try out by Walter Hepler, driller, on Well No. 2, Avoca Island.

Nine inch open hole was drilled from 325' to 2685' with a Reed Reamer carried above Fish Tail Bit, excepting for about 150' where Roller Bit was required, and for the most part the Reamer was operated without the Oil Lubricator.

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Immediately after coming out with drill stem, without further reaming, a string of 6-5/8" casing was run and landed on bottom without any difficulties being encountered.

The hole has been reamed to full size as it was drilled and was kept to gauge by the continuous use of the Reamer.

On this well it was demonstrated:

1st - That hole was apparently made as rapidly with reamer as without.

2nd - That Reamer kept hole to gauge.

3rd - That the walls of the hole seemed to stand up better due to use of Reamer.

4th - That the several days usually required to ream hole to bring it to gauge before casing is set may be saved.

5th - That the Reamer seemed to work as well with only the drilling mud for lubrication as when the Oil Lubricator was used, and any excessive wear was not noticed.

In my judgment, the old method of drilling a variable size hole and then spending a number of days reaming it to gauge is not as good practice nor is it as rapid or as safe a method as making a finished hole true to gauge as you go.

Yours truly,
Warren B. Reed

Note — Warren B. Reed is not connected with this concern nor related to the head of the Reed Roller Bit Co.

This story tells what most of the driller boys already know, but if you happen to be the exception, then you will be intensely interested in a copy of our general catalog and the "Rubiayat of O'Gosh Dingut"—the latter based on sworn testimony proving that oil should never be used in operating a Reed roller rock bit.

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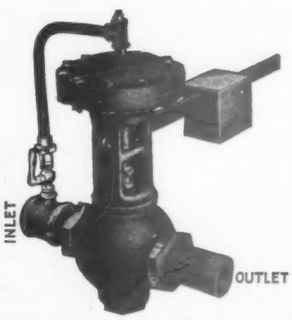

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at 3,867 feet. It was an old well drilled deeper.

The Mountain Fork Oil Co.'s No. 1 Harry, SE SW SW, Section 28-15-10, was abandoned at 3,255 feet, having a hole full of water. A couple of sands were drilled through in the Cumberland Oil Co.'s No. 4 McIntosh, CSL SW SW, Section 23-15-10, the upper sand at 2,630-70 forming some gas, but the lower at 3,014-15 showing nothing.

A rotary was being rigged up for the Carter Oil Co.'s No. 1 Windler, C SE NW NE, Section 31-9-23w, in Beckham County.

Other Creek County wells of interest included the Midwest & Gulf Oil Corp.'s No. 3 Foodnow, CNL NW NE, Section 20-15-10, an old well, drilling deeper, which had the 6-inch casing set at 2,708 feet. The Kawfield Oil Co. was cementing the 6-inch casing at 2,665 feet in its No. 8 Grayson, NW NE, Section 9-15-10. R. D. Donnelly set the 8-inch casing at 2,400 feet in its No. 2 Bear, SW SE NW, Section 16-14-10.

A 15-quart shot in sand at 3,230-34 feet made a 15-bbl. producer out of Tom Kelly's No. 1 McNac, SW NW, Section 3-14-10. It was also making some water.

Shooting Old Wells

The shooting of old wells continued in the Tonkawa district, resulting in considerable increases in production. T. B. Slick and others gave their No. 4-A Endicott, NE cor. SE SW, Section 35-25-1w, a shot of 80 quarts in sand at 2,444-86 feet, raising its production from 90 bbls. to 210 bbls. of 43 gravity oil. Their No. 7-A Endicott, SW cor. SE SW, in the same section, was increased from 80 bbls. to 165 bbls. by means of a 40-quart shot in sand at 2,420-60 feet, and No. 10-A Endicott, C NW SE SW, Section 35-25-1w, which had been producing 75 bbls., made double that amount following the firing of 20 quarts in sand at 2,443-83 feet. A charge of 10 quarts was sufficient to increase the production of the Slick interests' No. 1-C Endicott, SW cor. Section 35-25-1w, from 55 bbls. to 165 bbls., the shot having been given in sand at 1,842-62 feet. No. 8-C Endicott, NW cor. SE SW, same section, made 180 bbls. after a 20-quart shot in sand at 1,845-65 feet. It had been good for 45 bbls. daily.

The Comar Oil Co.'s No. 4 Endicott, NE cor. SW, Section 35-25-1w, was pumping salt water from sand found at 2,490-2,538 feet. McCaskey and Wentz had 3 wells shut down on their McKee lease in Section 34-25-1w, all three of them below 2,350 feet. The Comar Oil Co. was fishing for tools at 2,000 feet in its No. 22-A Clements, CEL NW NW, in the same section, and was cleaning out No. 9-A Clements, CWL SW NW, same section, at 2,540 feet.

Cable tools were being rigged up at 2,498 feet in The Texas Co.'s No. 1 Gillett, SE cor. SW, Section 27-25-1w, and the McMan Oil & Gas Co.'s No. 3 Warren, SE cor. SW SE, Section 27-25-1w, was good for 10 bbls. after an 80-quart shot in sand at 2,504-31 feet. No production came from the sand, which was topped at 2,480 feet, before the shot.

Noble County

The Comar Oil Co. maintained its usual amount of activity on the Blubaugh, Ellsworth and Carmichael leases south of Tonkawa in Noble County. This company had 21 rigs shut down on these leases in Section 2-24-1w, and also had 3 rigs rigging up. No. 8-A Blubaugh, NE cor. SW, in this section, an old well, was cleaning out at 2,099 feet; No. 10 Blubaugh, CSL SE SW, was shut down at 2,230 feet; No. 10-A, twin location, was bailing water at 2,605 feet; No. 12-B, CNL SE SW, was shut down at 724 feet; No. 15 Blubaugh, CEL NE SW, was bailing water at 2,395 feet; No. 17, C NE SW, was drilling at 2,428 feet; No. 22, CSL NE SW, was drilling at 2,057 feet; No. 23 Blubaugh, CEL SW, was drilling at 2,070 feet; No. 1-A Blubaugh, NW cor. SE, an old well, was drilling by pipe at 2,161 feet; No. 4 Blubaugh, CNL NW SE, was good for 92 bbls. natural from sand at 2,505-56 feet; No. 5, C NW SE, was fishing at 2,320 feet.

On the Comar's Ellsworth farm, in Section 2-24-1w, No. 8-A, SW cor. NE, an old well, was cleaning out at 2,46 feet; No. 11-B, CWL SW NE, was drilling at 908 feet; No. 12, CSL SW NE, an old well, was fishing at 2,470 feet; No. 13, C SW NE, had the 8-inch casing cemented at 2,390 feet and was shut down; No. 14, CSL NW NE, was underreaming the 10-inch casing at 1,800 feet.

On the same company's Carmichael lease in Section 3-24-1w, No. 3-B, NW cor. SW NE, was cementing off water at 2,278 feet; No. 13-A; CSL SW NE NE, was pulling on the 6-inch casing at 2,236 feet; No. 13-B, CSL SE NE, was shut down at 1,810 feet; No. 18-B, CSL SW NE NE, was shut down at 1,900 feet; and No. 22, CEL SW NE, was shut down at 734 feet.

The Comar Oil Co.'s No. 7-A Rust, CNL NE SE, Section 3-24-1w, made 2 bbls. on the pump after a shot of 4 quarts in sand at 2,052-80 feet. Total depth was 2,232 feet.

The Prairie Oil & Gas Co.'s No. 5-B Novotny, SE cor. NE SE, Section 10-24-1w, was drilling at 1,640 feet. The Comar Oil Co. was rigging up its No. 1 McCurhen, NW cor. SW, Section 11-24-1w, and had shut down No. 1-A Oliver, NW cor. NE, same section, after cementing the 8-inch casing at 2,590 feet.

The Healdton Oil & Gas Co. was rigging up No. 5-B Rence, NE cor. NW, Section 11-24-1w, at 1,866 feet. The same company shot its No. 11-A Rence, CWL SW NW, in the same section, into a 60-bbl. producer by a 13-quart shot in sand at 2,586-90 feet. The Healdton Co.'s No. 12 Rence, C NW NW, same section, was good for 240 bbls. natural from sand at 2,608-26 feet.

CANADIAN FIELDS

(Continued from Page 54)

company's refineries for further handling and the dry residual gas is piped to Calgary. The new Imperial Oil, Ltd. refinery at Calgary has been operating about six weeks. It is claimed to be one of the most up to date refineries, with an initial capacity around 3,500 bbls. a day, and is operating on crude oil from the Wyoming and Montana fields.

In connection with the development work in the Canadian West, A. M. McQueen, vice president of Imperial Oil, Ltd., and head of the company's production department, states that though actual drilling is at present halted, operations will not be permanently suspended. At least one crew will be sent to the Fort Norman area with a view to deepening the discovery well or sinking a deep hole alongside it. The discovery well was deepened to 951 feet and is capable of producing about 70 bbls. a day. A new well will probably be sunk beside it next year and the intention is to carry this new test to greater depth.

Fabyan Well

Outside this test, none of the Imperial Oil, Ltd., plans for 1924 have yet been defined. In view of the amusing reports about the "Mystery Well" at Fabyan (Imperial Oil, Ltd. Grattan No. 1, Section 18-45-7w-4) it is interesting to note that R. T. Elworthy, geologist of the Federal Department of Mines, has analyzed the gas. In a recent report Mr. Elworthy states that the well produces a dry gas. The fluid in the well is heavy oil and water, and has no commercial value. This official pronouncement set at rest reports from Irma and elsewhere that an important discovery had been made which was being "covered up." The Grattan No. 2, Section 14-45-8w-4, has been completed and abandoned, developing neither oil nor gas.

Work is still progressing at the oil Dingman property in the Okotoks Field where two new gas wells were drilled by the Royalite Oil Co., an Imperial subsidiary. Royalite No. 3 is producing about 4,000,000 feet of gas per day, and has been capped. No. 4 is producing about 7,000,000 feet a day, and will average about 100,000,000 feet per month during the winter.

In the northern foothills, the gusher drilled at Pouce Coupe, a year or two ago, is capable of giving about 10,000,000 feet a day. This will probably be a con-

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Base		520		650
Wheel Hub		360		1120
Wheel		2392		3438
Lower Spokes	7/8" dia.	19¼	7/8" dia.	25½
Upper Spokes	3/4" dia.	13	3/4" dia.	17½
Angles	2½x2½x5/16	46¼	3x3x5/16	68
Strain Rod	1⅜" dia.	92	1½" dia.	220
Upper Eccentric	20" stroke	840	24" stroke	1780
Lower Eccentric	20" stroke	860	24" stroke	1860
Binding Bolts	2" dia.	36	2" dia.	47
Bronze Bushing	5½x7 11/32	18	6 7/16x10⅛	50
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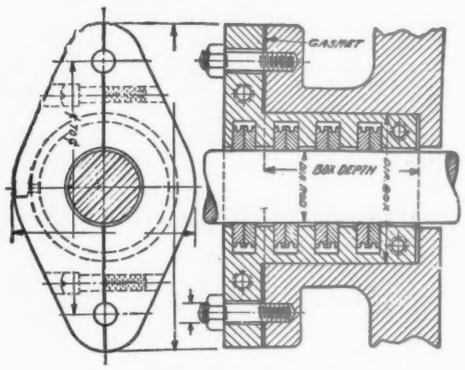

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bon black proposition, as there is no immediate market for the gas for domestic or industrial purposes. Further south, in the Coalspur district, the Imperial test on Section 3-49-21w-5, was abandoned owing to drilling difficulties, without being carried to a conclusive depth. Drilling conditions were found very similar to those in the Okotoks Field, with very hard and steeply inclined formations. This may be given a further test.

In the South, development work is in progress on the Rogers leases about 4 miles north of the international boundary and some distance east of Coutts. This test has not yet been carried to a conclusive depth.

Drillers From Texas

In east central Alberta, D. O. Credille, head driller on the British Petroleums,' Ltd., No. 2, Section 30-46-6w-4, has left for Texas, where it is reported he will secure drilling outfits and crews for work in the Canadian Field next spring. Mr. Credille states that in British Petroleum's No. 2 the drill went through five sands, four of which held oil, the fifth being dry, while one sand held high gravity fluid. This, it is proposed to develop in the next test. In No. 2, the high gravity oil was swamped by the heavier fluid and did not show, but its presence was determined. Mr. Credille states that the British Petroleum's crude is about 4 per cent lighter than the small oil showing in the Imperial drilling at Fabyan, and similar to the fluid found in the Kern River and McKittrick Fields in southern California, and will produce kerosene and lubricants but is low in gasoline content. It possesses an asphalt base. He claims the well as it stands will produce 200 bbls. a day and might do better, but the intention is, if possible, to bring in an easy flowing well without the attendant troubles of high gas pressure causing a movement of the sand and consequent cutting of the pipe. Mr. Credille estimates the potential oil area is 50 miles long and 20 miles broad, and the principal prospect of production is in the 150 feet below the point reached by the drill in British Petroleums No. 2. A peculiar feature of the geology is that the general formation is Cretaceous, as in the Texas Field, while the production horizon is almost identical with that of the California territory; hence production policies will be developed along California lines. The rotary rig can be used to good advantage for the first 2,200 feet, after which the standard outfit for deeper drilling in the Devonian formation.

PRICES ADVANCING IN CHICAGO AREA

(Continued from Page 78)

eral advance in practically all products in the Chicago area during the past week. On Saturday the average for all sales would come close to 8¾ cents, with only a few sales made at 8½ cents and others hitting the 9-cent mark frequently. Refiners, consistently sold up during the past few weeks, kept ahead of the actual market by asking 9½ cents or more.

The scarcity of naphtha, 56-58 450 gasoline, all higher gravities of straight run gasolines and the blends was remarkable. Several marketers, on direct questioning, asserted that they had not heard of a sale of naphtha within the past two weeks. The 68-70 360 gasoline was almost as scarce. Blends were rare products and followed the price development in New Navy tenaciously. There was considerable 60-62 400 gasoline sold during the earlier part of the week, but it vanished with 8½-cent New Navy. The 64-66 375 gasoline was scarce as was the 56-58 450 straight run product.

Natural gasolines, with absorption leading the list, turned upward, with reports of heavy purchases in the Mid-Continent by a leading manufacturer. Blend makers have been buying grade A material, anticipating a big demand for blends along with the higher Navy. The best absorption was strong at 7 cents. The other grades were not in demand to such an extent and as a result showed a much smaller increase in price.

Kerosene was merely steady with few indications that it would show any de- velopments soon. Export demands are about satisfied, it is said, and domestic demand has been almost lacking.

Fuel Oil and Lubricants

Fuel oil advanced with the higher prices for crude oils in the Mid-Continent. Most students of the situation feel that the bottom price in Chicago for 24-26 grade was 85 cents. No sales at 90 cents have been reported authoritatively, but several were made at 87½ cents. It was scarce, however, and may touch the 90-cent mark soon. Smackover and El Dorado grades are growing scarce. Prices have advanced materially and there has been little available. Gas oil was firm and straw distillate was holding up well.

Fuel oil specialists report a flood of inquiries from buyers interested in securing supplies in 1924. Scarcity of supplies is making marketers hesitant about quoting over any considerable period. The unsettled conditions that have been apparent in the gasoline market during the past week have been just as noticeable in connection with fuel oils.

In reference to lubricants, refiners are greatly encouraged. Oklahoma products have been showing a tendency to gain an advantage over Pennsylvania lubricants. Installation of centrifuges, giving Oklahoma refiners a dewaxed product of 10-0 degrees cold test has afforded buyers a more popular product in this section in comparison with the Pennsylvania oil settled oils. Pennsylvania manufacturers are said to be awakening to the situation and are installing centrifuges. Pennsylvania lubricants showed considerable strength during the past week, advancing in line with crude advances in that territory. Oklahoma pale oils became even stronger and Gulf Coast products enjoyed a good demand as well. Wax was strong.

The tank wagon advance, while of primary importance, had been predicted freely, and was overshadowed by the scramble on the part of buyers, who felt that it was a case of "now or never," if they were to keep ahead of demand. Actual shipments were small and the week could be characterized as slow, had it not been for the psychological influence of the bullish market.

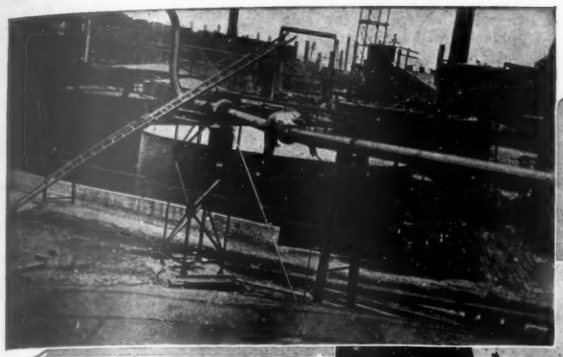
Predict More Advances

Refiners were influenced to a large extent by the action of marketers in search of future deliveries. The marketers sent out queries to all refiners with available supplies. In most cases the inquiries were duplicated by different marketers in part or entirely, and the same inquiries were duplicated again among the refiners, making the actual demand appear greater than it was in reality. This condition was partly responsible for the refusal of refiners to furnish quotations, as the unsettled situation grew worse steadily.

Leaders among refiners feel that they have the situation in their hands at present and they are hoping that enthusiasm will not run riot with too much premiding of prices, which coupled with a little bad weather and a few cars of distress stuff, could easily bring about a severe setback.

Marketers and refiners, however, give voice to continued optimism, many predicting a tank car price of 10½ cents for New Navy in a few days should the present conditions hold steady. With the refiners able to control the supply, if they stick to their evident determination to do so, there is no reason why they cannot set their own prices, as long as the demand for motor fuel continues good. The whole structure, however, can be swept aside in a short time, with the breaking away from the crowd by some refiner caught with too much gasoline who is forced to sell at a reduction.

Conservatives in the oil business have noticed that sentiment often runs to opposite extremes in headlong bursts. Intense pessimism often gives way to



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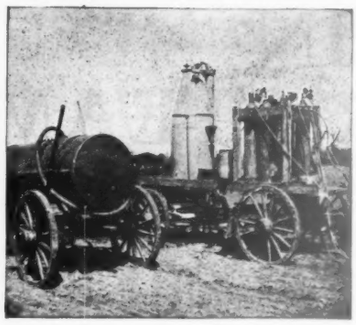

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hectic flight of optimism on a minute's notice. The reversal to the depths of business despair may come just as quickly. The shrewder leaders in the sale of refined products realize this tendency and while they are cognizant of actual happenings, do not feel that the industry should run away with itself. They counsel conservatism in the present situation, advising that a slow steady progress toward a better price goal will be better than a series of quick advances and sudden declines. The immediate future is a matter of conjecture, with everyone interested, refiner, marketer, jobber and consumer, alive to the conditions that now exist and eagerly awaiting developments.

ALL INITIAL PRODUCTION RECORDS SMASHED

(Continued from Page 20)

tion of the 83 oil wells drilled was 19 bbls. per well, while in the year before 305 oil wells drilled averaged 7 bbls. per well.

The Lima Field also showed a larger production per well from its 1923 crop of oil wells. There were 176 more completions than in 1922 and an increase in initial production of 5,739 bbls., 14 more dry holes and 5 more gassers. The 606 oil wells finished last year averaged 22 bbls. per well, while 449 oil wells finished in 1922 averaged 16 bbls. per well.

Kentucky was another State where the average production was higher in 1923 than in the previous year. There were 326 fewer wells drilled in the State than in 1922, with very nearly the same quantity of total initial production. There were 21 more dry holes and 26 more gas wells. The average production of the 1,418 oil wells was 23 bbls., as against 18 bbls. for the 1,791 oil wells of 1922.

There were 12 oil wells and 39 dry holes and 1 gas well finished in Tennessee in 1923 as against 16 oil wells, 15 dry holes and 1 gas well the previous year. The 12 oil wells averaged 140 bbls. in new production while the 16 of the year before averaged between 4 and 5 bbls.

Twelve dry holes and 1 gas well were drilled in Mississippi last year. Georgia and Alabama each show a dry hole as its record for the year.

While Illinois experienced a falling off in field work, 81 fewer wells having been completed there than in 1922, there were 148 oil wells completed last year, averaging 34 bbls. per well in new production, while the 252 oil wells finished the year before averaged 23 bbls. Seven more dry holes were drilled in 1923 than in 1922 and 16 more gas wells.

The Indiana Field with 122 oil wells, averaging 36 bbls. per well new production, as against 170 oil wells the previous year, averaging 14 bbls. per well, accomplished this good result in the face of a great curtailment of operations. Only 130 wells were completed, 101 fewer than in 1922, but the new production amounted to 4,411 bbls. as against 3,300 bbls. the previous year. There were 6 fewer dry holes and 2 fewer gas wells.

DECLINE SHOWN IN DECEMBER OPERATIONS

(Continued from Page 21)

duction in December against 6,000 bbls. last month. The Laredo districts declined over 300 bbls.

December 27, The Texas Co. posted an advance of 25 cents for Gulf Coast crude, making the price $1.25 and other lines are expected to follow. The advance comes sooner than was anticipated and will serve to renew interest in the pools and result in an increase of operations.

NORTH CENTRAL TEXAS

Including December 20, 1923

District—	Comp.	Prod.	Dry	Gas
Wichita	16	772	6	0
Burkburnett	20	1,306	4	0
Eastland	10	252	2	0
Stephens	11	1,234	3	0
Young	5	283	1	1
Archer	41	2,926	7	0
Wildcats	14	368	7	3
Total December	117	7,141	29	4
Total November	75	7,418	35	4
Difference	42	277	4	0

Summary of New Work

District—	Rigs	Drg.	Tot.
Wichita	10	25	35
Burkburnett	4	19	23
Eastland	6	10	16
Stephens	9	13	22
Young	2	13	15
Archer	10	51	61
Wildcats	24	53	77
Total December	73	203	276
Total November	61	184	245
Difference	12	19	31

Greater activity was shown in the fields of North Central Texas during December than in November although the amount of initial production of the completions recorded a slight decline. There were about 60 per cent more wells completed while the amount of new work showed an increase.

WYOMING

District—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Tot.
Big Muddy	1	105	0	0	0	4	4
S ft Creek	35	9,718	2	0	45	90	135
Lance Creek	1	0	1	0	0	7	7
Warm Spgs.	2	0	1	1	5	22	27
Big Horn Basin	2	10	1	0	4	21	25
Lost Soldier District	3	0	2	1	9	90	99
Rock River District	3	375	0	0	1	17	18
Fremont Co.	0	0	0	0	4	28	32
Mule Creek	0	0	0	0	0	2	2
Osage	1	50	0	0	3	8	11
Natrona Co.	2	0	0	2	1	19	20
Lincoln and Uintah Cos	0	0	0	0	4	17	21
Baxter Basin	0	0	0	0	2	13	15
Miscl.	1	0	1	0	7	42	49
Total Dec.	51	10,258	8	4	91	345	436
Total Nov.	43	14,669	4	3	94	389	483
Difference	8	4,411	4	1	3	44	47

Gas production, 36,000,000.

MONTANA

District—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Tot.
Cat Creek	2	0	2	0	2	21	23
Kevin Sunburst	12	595	1	1	14	36	50
Miscellaneous	3	0	3	0	5	106	111
Total Dec.	17	595	6	1	21	163	184
Total Nov.	22	1,095	6	0	20	164	184
Difference	5	500	0	1	1	1	0

Gas production, 3,000,000.

UTAH

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Tot.
December	0	0	0	0	1	34	35
November	0	0	0	0	0	34	34
Difference	0	0	0	0	1	0	1

Winter weather and the low price of oil combined in making the month of December the most quiet of the year. Little new work is being undertaken and all but the large fields are closing down until spring. In the number of completions only December records exceed those of November and Wyoming; the total number of rigs up and drilling in the State shows a falling off of 47, and with total completions standing at 32, few new operations were begun to replace the completed wells in the active list. With a larger number of completed wells, the total new production falls below that of November, partly due to an unusual number of dry holes and gas wells.

Montana records show a falling off along the line, though the completions were for the most part replaced with new operations in spite of the season of the year. The Kevin Sunburst Field is exceptionally quiet as there is no market at present for this crude, all storage being filled.

Little activity may be expected from the Northwestern territory before March unless the crude market rises sufficiently to furnish an incentive for winter drilling.

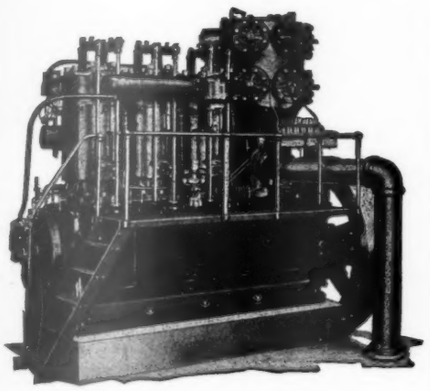
CENTRAL OHIO

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Tot.
Licking	0	0	0	0	0	1	1
Fairfield	4	0	3	1	0	4	4
Knox	3	0	1	2	0	3	3
Ashland	4	0	0	4	0	10	10
Medina	10	0	2	8	6	14	20
Lorain	9	0	6	3	4	4	8
Wayne	24	100	7	16	11	29	40
Richland	9	0	4	5	0	25	25
Vinton	0	0	0	0	0	1	1
Hocking	2	0	1	1	0	1	1
Holmes	7	0	2	5	5	15	20
Coshocton	1	10	0	1	0	1	1
Jackson	4	0	3	1	5	7	12
Athens	9	0	0	9	2	4	6
Meigs	1	0	0	1	1	1	2
Huron	1	0	0	1	0	0	0
Total Dec.	85	110	29	57	38	119	157
Total Nov.	95	173	27	63	46	126	172
Difference	7	63	2	6	8	7	15

Several interesting gas features were developed in the Central Ohio gas area for the closing month of 1923. The best

The Reeves Vertical Gas Engine—Compressors For Gas Booster Plants



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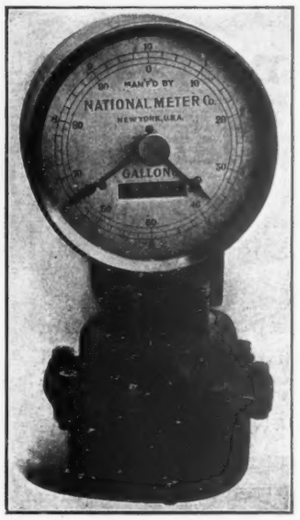

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completion was on the J. B. Date farm, Hanover Township, Ashland County, an unusually large one for the field, and another wildcat found in Orange Township, same county, for close to 1,500,000 feet, adds some additional territory to develop in that county. York Township, Medina County, also had two excellent gas wells on the Acker farm, and in Lorain County, two wildcat gas wells were found in Grafton and Columbia Township, above a million feet each. Wayne, Hocking, Holmes, Jackson and Athens counties produced above normal sized gas wells for the month, and a majority of them were in advance of former developments. The only oil well of note for the month was found by the Ohio Oil Co., on the Orr farm, in Wooster Township, Wayne County, with 100 bbls., from the Clintotn formation.

EASTERN FIELDS

Summary of Completed Work

Field—	Comp.	Prod.	Dry	Gas
Allegany	20	38	0	0
Bradford Field	56	140	2	2
Middle Field	3	2	0	1
Venango-Clarion	23	29	1	9
Butler-Armstrong	11	30	1	3
Southwest Penn	20	20	4	15
West Virginia	85	157	16	42
Southeastern Ohio	65	322	17	17
Total December	282	738	41	89
Total November	355	1,543	50	84
Difference	73	805	9	5

Summary of New Operations

	Rigs	Drg.	Ttl.
Allegany	6	14	20
Bradford Field	14	52	66
Middle Field	1	6	7
Venango-Clarion	5	21	26
Butler-Armstrong	8	23	31
Southwest Penn.	18	35	53
West Virginia	77	105	182
Southeastern Ohio	22	52	74
Total December	151	308	459
Total November	181	343	524
Difference	30	35	65

There were 73 fewer completions in the Eastern fields in December than in November, with 805 bbls. less production. There were 9 less dry holes and 5 more gas wells. At the close of the report there were 30 less rigs and 35 less drilling ,a total reduction in operations of 65.

ILLINOIS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Clark	3	91	1	0	0	2	2
Cumberland	0	0	0	0	0	1	1
Crawford	3	10	0	0	0	1	1
Lawrence	1	3	0	0	0	0	0
Monroe	2	4	1	0	0	2	2
Coles	0	0	0	0	0	1	1
Wabash	2	0	2	0	3	1	4
Jackson	5	45	1	1	0	2	2
Jefferson	0	0	0	0	0	1	1
Union	0	0	0	0	0	1	1
Total Dec.	16	158	5	1	3	12	15
Total Nov.	12	149	2	5	3	20	23
Difference	4	9	3	4	0	8	8

Little was accomplished by the drill during December in the Illinois fields, although there is an increase over the November report. The December figures show an increase of 4 in completed wells, 9 bbls. in new production and 3 dry holes, while there were 4 less gas wells.

LIMA FIELD

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Wood	5	169	0	1	2	10	12
Hancock	3	47	0	0	0	10	10
Allen	6	72	1	0	0	0	0
Auglaize	4	44	0	0	2	0	2
Sandusky	2	1	1	0	1	1	2
Mercer	2	13	0	0	0	8	8
Van Wert	3	5	1	1	1	1	2
Seneca	2	260	1	0	0	3	3
Lucas	0	0	0	0	0	1	1
Ottawa	1	8	0	0	0	2	2
Darke	2	13	0	0	0	0	0
Hardin	0	0	0	0	0	1	1
Total Dec.	30	632	4	2	6	37	43
Total Nov.	51	729	8	0	4	43	47
Difference	21	97	4	2	2	6	4

There was a heavy slump in completed work in the old Lima Field of northwestern Ohio during December, but this is expected as every year the close shows but few completions around the holiday month. While less wells were reported, there is but a slight difference in the new production secured from the previous month's work. The best well for the month was the Sun Oil Co.'s second test on the Sepile farm, in Elden Township, Seneca County, which produced 260 bbls. from 290 feet in the Trenton, and the Ohio Oil Co.'s No. 19 on the J. A. Meyer, Section 6, Bloom Township, Wood County, and just north of Cygnet, which produced 110 bbls. at around [illegible] feet in the Trenton, located just north of the good well on the Loose lease, drilled by the Western Ohio Oil Co., some [illegible] months ago. Deep down in the Trenton for the lower pay will be the prospecting of the leaseowners the coming summer.

INDIANA FIELD

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Jay	5	427	0	0	1	13	14
Randolph	2	70	0	0	0	7	7
Gibson	3	0	3	0	1	3	4
Pike	0	0	3	0	1	2	3
Sullivan	3	0	3	0	0	0	0
Knox	0	0	0	0	0	1	1
Total Dec.	13	497	6	0	3	26	29
Total Nov.	9	45	3	1	1	23	25
Difference	4	452	3	1	2	3	4

The only real feature of the [illegible] Field during December was the bringing in of some above average producers in the Hotmire Pool along the dividing line of Jay and Randolph counties. This pool has attracted considerable attention of late and a number of nice deals in production were closed during December, which means that the early spring will see a further testing out of that territory supposed worthless during the early days of development. Attempts will also be made to connect up with the Fort Recovery Field across the State line in Mercer and Darke counties, Ohio.

KENTUCKY-TENNESSEE

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Wayne	2	10	0	0	1	1	2
Powell	3	25	0	0	0	2	2
Estill	0	0	0	0	0	1	1
Lee	2	20	0	0	0	0	0
Lawrence-Johnson	14	485	0	0	0	16	16
Johnson-Magoffin	12	104	0	0	0	11	11
Allen	18	77	8	0	0	9	9
Warren	13	242	2	0	3	15	18
Barren	14	99	4	0	0	11	11
Simpson	1	18	0	0	0	1	1
Cumberland-Monroe	10	685	2	0	0	21	21
Clinton	0	0	0	0	0	1	1
Russell	4	36	1	0	0	4	4
Owensboro	12	243	6	0	0	11	11
Hopkins	2	0	2	0	0	1	1
Owsley	5	5	2	2	0	4	4
Metcalf	6	6	3	1	0	6	6
Breathitt	0	0	0	0	0	1	1
McLean	0	0	0	0	0	1	1
Henderson	0	0	0	0	0	1	1
Montgomery	2	4	0	0	0	1	1
Rowan	0	0	0	0	0	1	1
Grayson	0	0	0	0	0	1	1
Elliott	0	0	0	0	0	1	1
Laurel	0	0	0	0	0	1	1
Hardin	0	0	0	0	0	1	1
Pike	0	0	0	0	0	1	1
Knott	0	0	0	0	0	1	1
Floyd	0	0	0	0	0	1	1
Marion	0	0	0	0	0	1	1
Harlan	0	0	0	0	1	0	1
Todd	0	0	0	0	0	1	1
Adair	1	0	1	0	0	0	0
Owen	1	0	1	0	0	1	1
Morgan	1	0	0	1	0	0	1
Total Ky.	123	2,058	32	4	6	121	131
Tennessee	12	35	11	0	2	16	18
Mississippi	0	0	0	0	2	0	2
Alabama	0	0	0	0	0	11	11
Georgia	0	0	0	0	1	4	5
Florida	0	0	0	0	5	9	14
Total Dec.	135	2,093	43	4	16	161	181
Total Nov.	142	1,818	47	5	16	117	138
Difference	7	275	4	1	0	44	43

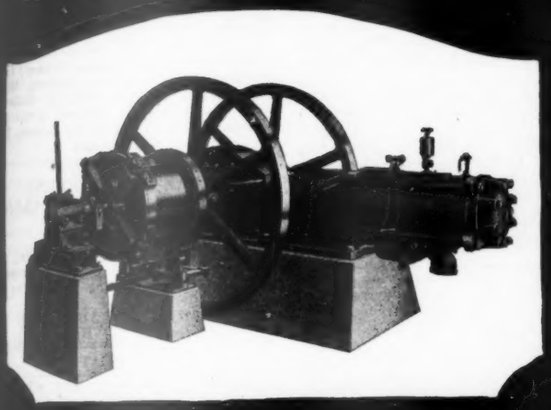
In the Southern group of fields, consisting of Kentucky, Tennessee, Mississippi, Alabama, Georgia and Florida, during December there was, compared with the November report, a decrease of 7 in completed wells, 4 in dry holes and 1 gas well, while the new production shows a gain of 275 bbls., which is encouraging at this stage of the development. (One advance in the price of Kentucky crude was made just before the holidays of 10 cents per barrel, and with better prices in sight the average operator will no doubt get busy before the spring season arrives.

The heavy slump comes in new development work, which is due to the holidays as many of the people interested in the oil industry in the southern fields are residents of other States and are spending their vacation time at home. At the close of December there were 16 rigs and 253 drilling wells, or a total of 269, while the close of November showed 16 rigs and 317 drilling wells, for a total of 333, making a decrease in new work of 64.

FRANKLIN

VALVELESS GAS ENGINES

Have minimum parts. Require fewer adjustments. Eliminate valve grinding. Construction keeps out all sand and grit. Saves 75% in lubrication cost over other type engines.

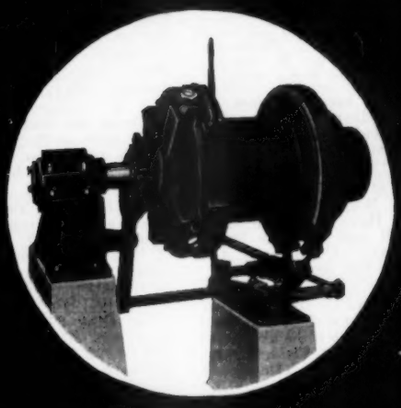


TYPE "S" REVERSIBLE CLUTCH

A strong, reliable, self-oiling, quiet running clutch, requiring little or no attention after once installed.

Well constructed—all parts are interchangeable. Lubrication of pulley, bushings and gears automatic and positive in action.

There is no better clutch made for oil field service than the FRANKLIN type "S".



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CLASSIFIED WANTS

COPY must be in our office Friday prior to date of issue. Average 6 words to the line. Cash in advance

LEASES—PRODUCTION

HAVE BUYER for small producing royalty, if priced right. Describe fully. A. N. Wooldridge, Chickasha, Okla.

CLOSE IN lease; proven territory; Duncan Field; want drilled on overriding basis; quick action. A. N. Wooldridge, Chickasha, Okla.

WILL FURNISH a 320 to 2,500-acre block in Mendocino County, California, for drilling contract. W. N. Voegtly, 455 West Tenth St., San Pedro, Calif.

FOR SALE—At bargain prices, oil and gas leases, production and royalties in the Kentucky shallow fields. For full particulars and maps, address W. P. Harley, Bowling Green, Ky.

TEXAS OIL LEASES 10c an acre up to $10 an acre. Will sell tracts of 10 acres or more. Have 30,000 acres to choose from. All new five-year leases. Get full particulars. Gulf Realty Co., 1093 Bedell Bldg., San Antonio, Tex.

I HAVE wildcat acreage for sale in vicinity of well located by the same geologist who discovered the Sayre oil field and recommended by him to be as safe an investment as the Sayre Field. I can sell for $2 per acre and up. Dr. W. R. German, Canadian, Tex.

10c AN ACRE and up for leases in Guadalupe, Blanco, Medina, Zapata and many other counties. Will sell 10 acres or more. All new five year leases. Get particulars. Gulf Realty Co., 1014 Bedell Bldg., San Antonio, Tex.

FOR SALE — 300-acre farm, all in cultivation, adjoining Checotah, Okla., on main line Missouri-Kansas-Texas Railway and Jefferson Highway; large house, barn, city water, light and gas; no better location in Oklahoma for grain, fruit, dairy and stock farm. If interested, write the owner for price and terms. A. G. Harmon, 506-7 Exchange National Bank Bldg., Muskogee, Okla.

FOR SALE—Leases or production in shallow field, wells from 700 feet to 950 feet deep. Will sell acreage or production cheap. Owner, P. O. Box No. 385, Logan, Ohio.

ATTENTION, Oil Man or Investor: 45-section improved ranch in central Gray County, Texas, in line with present oil development, $10 per acre in fee; unusually good terms. Other choice Panhandle propositions and leases on demand. Address G. C. Davis, Amarillo, Tex.

Production
Drilling Blocks
Leases and Royalties
Geological Value Given Preference
J. M. Allen
902 Petroleum Bldg. Tulsa, Okla.

WEWOKA leases and royalties; drilling proposition. Only first-class stuff offered; guarantee delivery. E. E. Tomlinson, Box 363, Wewoka, Okla.

POTTAWATOMIE COUNTY leases and royalties. B. H. Rowlett, Tecumseh, Okla.

1,000 ACRES leases in Fisher County, Texas. Good location, near prospective wells. Price $10 per acre. Write for details. Ancil T. Brown, 306 Guaranty Bldg., Indianapolis, Ind.

40-ACRE farm, good house, barn, well, orchard, part bottom, about 20 acres cultivation, close to school, church and small town; horse, pigs and chickens. First with $650 gets farm and all. Bee Vanemburg, Moorefield, Ark.

$12,000 EQUITY, 196 acres 1½ miles Caney, Kans., 100 acres creek bottom alfalfa land; no overflow; balance upland pasture; well improved, 2½ miles to oil. Want cash, income or merchandise. J. H. Miller, Mound Valley, Kans.

FOR SALE—640-acre lease, Elk County, Kansas. Located in Sections 1, 2, 11, 12, Township 30, Range 8. Make us an offer. Hunt, 339 Brisbane Bldg., Buffalo, New York.

LEASES—PRODUCTION

FREE LEASES—San Juan Basin, to developers. New Mexico's famous high gravity territory; 160 to 20,000 acres. Edward C. Hall, Sugar Land, Tex.

PRODUCERS, Refiners and others interested can secure protection acreage on one of the best anticlines in Montana. Recommended by U. S. G. S. and leading private geologists. Test well now drilling. Walter F. Brittan, Poplar, Mont.

WILL TRADE oil leases near drilling well in Childress County, Texas, on structure for similar leases or royalties near other drilling wildcat wells. Our well is fully financed and contracted to reliable people. No rentals till 1926. 300 Alworth Bldg., Duluth, Minn.

SHEFFIELD TERRACE (Marathon Fold) and Balcones Fault leases. We have them for 10c an acre up in tracts of 10 acres or more. All new five-year leases. 30,000 acres to choose from. Get particulars. Gulf Realty Co., 1017 Bedell Bldg., San Antonio, Tex.

LEASES FREE for drilling offsets. Allen and Warren Counties, Kentucky; 300 to 600 feet deep. Box 489, Bowling Green, Ky.

OIL OPERATORS—Montgomery County, Mississippi, world's next big oil field; 3,000 acres leases for well. W. C. Brooks, 282 S. Front St., Memphis, Tenn.

LET'S DRILL SOME SHALLOW OIL WELLS

Kentucky shallow field; three sands, 400 to 700 feet deep; drill and equip in eight days; new field; 45 producers out of 52 wells drilled. Last a lifetime; best deal since Nowata and Peru; $500 gets one-sixteenth in 100 acres, with first well completed. Will form closed corporation. Bank references given and required. Wells both sides—sure shot. Big money for the small man. J. P. Thurman, 811 First National Bank Bldg., Wichita, Kans.

BEST SEMI-PROVEN oil acreage in Wyoming—on structure—2,560 acres.

Adjoining property north pumping at 500 to 880 feet; flowing well at 1,200 feet, estimated to make 200 to 1,000 bbls. a day when drilled in—44.8 gravity oil, 55 per cent gasoline, 25 per cent kerosene, 15 per cent lub, and 5 per cent fuel and residue. Property under contract for sale to Utah Oil (Standard).

Adjoining property south just contracted to Salt Creek operators for drilling to start in 30 days; expect oil in 60 days. Other wells now drilling and contracted.

Will consider offers for sale of portion of tract, of drilling contract, or will share on first cost basis with parties providing part funds for development. Send dollar for map and reports. R. C. Horn, 410 Scott Bldg., Salt Lake City.

OIL LEASES

We have leases 20 to 50 miles from the new Luling Field in Texas from 10c an acre up to $1 an acre in tracts of 10 acres up to 10,000 acres. We have many other leases along Balcones Fault and Sheffield (Marathon Fold) Terrace. Here are a few of our leases:

Blanco County	10c an acre
Bandera County	30c an acre
Comal County	15c an acre
Hays County	20c an acre
Guadalupe County	$1 an acre
Kerr County	15c an acre
Medina County	40c an acre
Travis County	25c an acre
Zapata County	$1 an acre

We also have leases less than 1 mile from production at higher prices. All these leases are the standard form 88 5-year leases and all were bought direct by us from the land owner, which accounts for the extremely low prices. We have 30,000 acres on hand to take care of your orders. Don't send any money now; get particulars and maps first. No obligation.

GULF REALTY CO.
1022 Bedell Bldg. San Antonio, Tex.

LEASES—PRODUCTION

FOR SALE—200-bbl. a day combination oil and gas lease; 300 acres and the wells 1,000 feet deep. Address, Triangle Oil Co., Independence, Kans.

FOR SALE—Bargain improved 5 acres at Butler, Mo.; bluegrass; fine for dairy and poultry business. J. P. Hart, Butler, Bates County, Missouri.

NOTICE to Cash Buyers—Fine, large farms for sale. Paul D. Hubbard, Olathe, Kans.

FOR SALE—Six-barrel settled production; 1 well, 100 acres; production on four sides; located in Warren County, Kentucky. Box 365, Bowling Green, Ky.

ARCHER COUNTY, Texas—Have oil lease in southeast trend of Electra, Kemp, Munger, Allen and the new fields of Archer County. Will sell 40 acres at $7.50 per acre. Lease runs over four years. W. M. Breuer, Box 650, Wichita Falls, Tex.

PENNSYLVANIA Production, Bradford Field; 288 acres; 24 producing wells. Seven barrels daily production. Price and terms on request. Hunt, 339 Brisbane Bldg., Buffalo, N. Y.

ROYALTY—For sale in 9-9, Hughes County, Oklahoma; offset to drilling well located between two oil wells. Address Box A-21, care The Oil and Gas Journal, Tulsa, Okla.

WEWOKA—Oklahoma's newest oil field; have high class or cheap leases and royalties for sale, in Seminole, Pottawatomie and Lincoln Counties. W. R. Turner, 2123 Warren Ave., Chicago, Ill.

FOR SALE—EQUIPMENT

FOR SALE—Used casing and line pipe in A-1 condition, all sizes. Write or wire for prices. Cisco Pipe & Supply Co., Cisco, Tex.

FOR SALE — A 28 Star, fully equipped, near Sedan, Kans. Will sell cheap to close a copartnership. W. G. Kountz, Webb City, Mo.

DON'T BUY a light plant until you see Farmelectric, the Ford Parts Plant, and get prices and terms. Chas. S. Brown, state distributor, 21 N. Dewey, Oklahoma City, Okla.

THE WESTERMAN STUFFING Box does not pack with rubber rings and will give long, continuous service without attention. If your supply dealer hasn't them, send your order direct to The Dragon Mfg. Co., Marietta, Ohio.

FOR SALE

3—300 h. p. gas producers
3—350 h. p. gas engines
1—18x8½x14 belt driven compressor

Complete electric plants both D. C. and A. C.

All kinds of equipment bought and sold.
R. W. Russell, St. Mary's, W. Va.

FOR SALE — Complete artificial gas plant. Four-foot water gas set, capacity eight to ten thousand cubic feet per hour For particulars write The Upham Gas Co. of Texas, Mineral Wells, Tex.

FOR SALE—One No. 26 Star, only drilled one hole, fully equipped. Price $3,500. If interested, write or wire Harry Jorren, Bowling Green, Ky.

MILLER GAS ENGINE—Two-cylinder 85 h. p., practically new. A bargain for a quick sale. Address Jacob Wizenberg, Titusville, Pa.

FOR SALE, CHEAP — Standard rig, complete, Oil Well Supply Co. outfit. Address John Ewen, Alanreed, Tex.

FOR SALE—One-half interest in 1,000-bbl. refinery for $15,000; will put $5,000 back into the company for operating money. Will inventory better than $400.000. Address, Triangle Oil Co., Independence, Kans.

BRAND new pipe tools, original cases, for 9-inch, 10-inch and 12-inch pipe; 3 Toledo pipe threaders No. 4, each, $185; also 4 Barnes No. 7 pipe cutters, each, $15. Prices are f. o. b. cars, New York. Allen Ashley, 152 W. Forty-Second St., New York.

FOR SALE—EQUIPMENT

OIL REFINERY for Sale. Address J. I. Jones, Trustee in Bankruptcy, Box 1005, Great Falls, Mont.

FOR SALE—Transcript of testimony in case of Burrus vs. Halliburton, patent suit in United States Court, involving patent for cementing process of oil wells. B. R. Simpson, 515 Patterson Bldg., Oklahoma City, Okla.

FOR SALE—Geological library; U. S. Geologic Survey Annual Reports, Monographs, Professional Papers, Bulletins and Water Supply Papers: about 700 volumes; $350 f.o.b. F. C. Greene, 140 S. Cincinnati, Tulsa, Okla.

TANK BOLTS
SAME-DAY SHIPMENT

5/16x¾-inch, ⅜x¾-inch, ⅜x1-inch, ⅜x1¼-inch, ½x1-inch.

Write or wire for quotation.

SHEETS—All gauges and sizes; galvanized, blue-enamel. Also corrugated and composition roofing. Plates to ½ inch.

STEEL MFG. & WAREHOUSE CO.
1447 Genesee St. Kansas City, Mo.

INCORPORATIONS

DELAWARE incorporator. Charter fees small; forms. Chas. G. Guyer, 904 Orange St., Wilmington, Del.

WANTED

WANTED—Direct from owners, producing oil property in Kentucky, to operate on a percentage basis, property that owners are away or unable to give the proper care. Give full particulars first letter. Address Box A-30, care The Oil and Gas Journal, Tulsa, Okla.

WANTED—Two or three good blocks of acreage in East Texas for drilling contracts. Submit full details and best proposition in first letter. If not interested all data will be returned. Box 99, El Dorado, Ark.

WANTED—A good reliable bond house to underwrite a bond issue for an oil and gas company; 150.000 acres of oil and gas leases with $1,000.000 a year income. Address Triangle Oil Co., Independence, Kans.

DRAFTSMAN — Experienced in oil field equipment and capable of laying out and detailing tractors and power-transmission machinery. Good opening with live Ohio concern for the right man. State age, experience, salary desired and when available. Address Box A-29, care The Oil and Gas Journal, Tulsa, Okla.

STOREHOUSE OF INFORMATION

The Oil and Gas Journal contains statistics and unlimited information that is most valuable to the oil and gas man. Calls for back numbers are so numerous we are unable at all times to supply the demand—in fact, we can furnish very few back numbers. The issues missing from our files may be the ones you want. To make it possible for you, at all times, to refer to special articles or other information you desire, we have secured binders specially designed and durable and attractive in appearance that hold 26 numbers, or six months' issues. They are for sale at actual cost to us.

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Tulsa, Okla.

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CLASSIFIED WANTS

COPY must be in our office Friday prior to date of issue. Average 6 words to the line. Cash in advance

WANTED

WANTED—Acreage on good geology in Kansas or Oklahoma for drilling contract. Can give quick action. T. Gorges, 2127 West McCormick, Wichita, Kans.

EXPERIENCED oil jobber would like to hear from refiner or someone with capital to join in establishing bulk stations in Iowa. Address P. O. Box 227, Des Moines, Iowa.

GROWING specialty company selling oil field equipment, is desirous of securing a reliable office and sales manager. Small investment required. Write Box A-32, The Oil and Gas Journal, Tulsa, Okla.

WANTED—From owner direct, complete 24 Star rig, casing, etc. Also good driller. A. Schick, Vinland, Kans.

WANTED—To contract for gasoline rights of dry or casinghead gas to build gasoline plants. Also interested in the purchase of present gasoline plants, preferably in the East. Address Box A-31, care The Oil and Gas Journal, Tulsa, Okla.

BUSINESS OPPORTUNITY

To circularize the readers of The Oil and Gas Journal, once, it would cost more than $500. For a small sum you can reach these readers and place your proposition before them.

The classified rates are attractive. It costs but 25 cents the line for the first insertion and 15 cents the line for each additional insertion. Six words usually make a line. Cash with the order.

This useful table will help you to figure the cost of Classified Advertising in The Oil and Gas Journal. Keep it for reference:

	1 time	2 times	3 times	1 month
3 lines	$ .75	$1.20	$1.65	$2.10
4 lines	1.00	1.60	2.20	2.80
5 lines	1.25	2.00	2.75	3.50
6 lines	1.50	2.40	3.30	4.20
7 lines	1.75	2.80	3.85	4.90
8 lines	2.00	3.20	4.40	5.60
9 lines	2.25	3.60	4.95	6.30
10 lines	2.50	4.00	5.50	7.00

COMMON LAW COMPANIES — Organize under Declaration of Trust; many advantages; legal everywhere; managed by trustees; limited liability. No State organization fees, reports or franchise tax. Meet or do business anywhere. Better than a corporation or partnership. Booklet free. Modern Organization Co., 304 South Broadway, Los Angeles, Calif.

CAPITAL RAISING — Compaigns planned, written, printed — everything complete ready to mail to investors. Twenty years' experience handling investment advertising. Clients all over America. Big, illustrated book, "How to Raise Capital" free if you submit detailed outline of your proposition. Ernest F. Gardner, L-511 Ridge Arcade, Kansas City, Mo.

INTERNATIONAL financing; want right now high-grade bond or stock issue. Box 471, Oklahoma City, Okla.

GEOLOGICAL ENGINEER, 12 years' experience examinations, reports, appraisals, management, oil properties, seeks a new engagement or proposition either with an oil company or with a banking or brokerage house interested in financing or specializing in oil. Principals only. Write Box A-12, The Oil and Gas Journal, Tulsa, Okla.

IF YOU are a working man or woman and want success, write for proof of financial independence. Address Messinger, 1101 Chronicle Bldg., San Francisco, Calif.

I HAVE some fine duck lakes to lease and a good house to camp in and will keep the decoy ducks. A. T. Lloyd, Route 4, Clinton, Mo.

CHARLES T. LUPTON, Consulting Geologist, First National Bank Bldg., Suite 1029-30, Telephone Main 6550, Denver, Colo.

BUSINESS OPPORTUNITY

VENEZUELAN Oil Concessions—Officers of large oil producing company would consider inviting select coterie of experienced oil men of good standing to join in acquiring choice oil holdings and concessions in Venezuela. Post Office Box 957. Kansas City, Mo.

POSITION WANTED

MECHANICAL Engineering Graduate with four years office and field experience in production work wishes position with reliable oil company. Address Post Office Box 243, Topeka, Kans.

The Journal has a wide circulation, going to all the oil fields, refineries, pipe line stations, gasoline plants, supply houses and business offices. It thoroughly covers the industry.

PRACTICAL oil man desires employment who has had success drilling, increasing old production, eliminating water, economy in operating expenses. Reference. Address Box A-11, care The Oil and Gas Journal, Tulsa, Okla.

CARBON BLACK superintendent desires connection with responsible party West. Experienced in construction plants and producing different grades of black. At present in charge of operation East. High-class references. Address Box A-3, care The Oil and Gas Journal, Tulsa, Okla.

ARE YOU EXPANDING?—Refinery construction and operation superintendent; have had 10 years' practical experience and now employed by a large refinery. Address Box A-22, care The Oil and Gas Journal, Tulsa, Okla.

PRODUCTION superintendent, with 28 years' experience in all branches of the producing and gasoline ends of the industry, desires to make connections with reliable organization. Address Box A-20, care The Oil and Gas Journal, Tulsa, Okla. Phone Osage 1930.

FIELD MANAGER, who has had several years' experience in charge of production and drilling for large companies in the Mid-Continent and Wyoming fields, is open for a position of responsibility. Am a graduate engineer and possess references of highest character. My experience, which has been very thorough and extensive as an executive and field manager, qualifies me to handle the operations of a private individual or the work of district superintendent. If you are in need of a man who has developed character and initiative, please address Box 803, care The Oil and Gas Journal, Tulsa, Okla.

PIPE LINE superintendent, a man who has had several years' experience on both main lines and gathering systems, would like to connect with company that appreciates ability to handle both the office and field.

Thoroughly understand tank building, construction, operation and maintenance of pump stations and main lines.

Can install over and short system that is leader of such systems.

If you are in need of a good man for a responsible position, would like to exchange references. Am now employed, but will be open for position about first of the year. Address G. 509 W. Hillsboro St., El Dorado, Ark.

FOR SALE—PETS

AIREDALES—One male, $15; two females, $10; pedigreed; 3111 Wood, Kansas City, Kans.

PURE WHITE Collie pups. An ideal Christmas gift. Papers with each pup. Address Louise Spohrer, Box 255, Nevada, Mo.

LETTERHEADS—PRINTING

OIL FIELD LEGAL BLANKS—Leases, assignments, releases, township plats, gauge books, run tickets, time books, well records, etc. Request on your letterhead gets free catalogue. Olds Press, 215 East Third St., Tulsa, Okla.

SINCLAIR'S PROTEST HALTS SENATE PROBE

(Continued from Page 28)

to "make a market" for Mammoth oil. When the committee voted to require an answer, Mr. Sinclair gave 15 names of individuals and companies, among the former being J. L. Replogle, H. P. Whitney, J. S. Cosden, E. G. Frace, A. W. Kelly, Percival S. Hill, Lawrence Waterbury, George H. Flynn, C. G. Salisbury and Clarence K. McCormick.

The committee divided four to three on the motion to compel Mr. Sinclair to reply, Senators Lenroot, Wisconsin; Smoot, Utah, and Cameron, Arizona, Republicans, voting in the negative, and Senators Walsh, Montana; Kendrick, Wyoming, and Adams, Colorado, and Ladd, Republican, North Dakota, voting in the affirmative.

May Respect Refusal

An indefinite adjournment was taken with Mr. Sinclair's attorneys declaring there was not sufficient authority in the nation to place any witness under such compulsion. Later it was said Mr. Sinclair's attitude of refusing to answer probably will be respected by the Senate public lands committee.

Mr. Sinclair told the committee that the capital stock of Mamomth Oil Co. is owned at present as follows:

H. F. Sinclair, 898,790 Class A and 3,500 Class B shares; the Hyva Corporation, 240,700 Class A shares; the Selah Corporation, 17,880 Class A shares; Sinclair Consolidated Oil Corp., 500,560 Class A and 1,500 Class B shares; Elisha Walker, 5,000 Class A shares; H. P. Whitney, 155,000 Class A shares; Mammoth Stock Syndicate, 272,130 Class A shares. The public, he said, holds none of the stocks.

"The Hyva Corporation is in the nature of a personal venture?" Senator Walsh asked.

"I own 90 per cent, my wife 9 per cent, and my mother 1 per cent of its stock," the witness replied.

"I am obliged by a sense of obligation to those who are associated with me and whom I represent, and by a genuine conviction as to the right of business privacy, to make an earnest protest," Mr. Sinclair said in a statement filed with the committee.

"The Mammoth Oil Co. is the company created to carry out the obligation of the lease. Transactions which may have taken place in the stock of that company did not and cannot bear the remotest relation to the procurement of the lease. Not one share of that company nor the proceeds thereof ever reached or was intended to reach any individual who represented the Government. Moreover, not a share of the proceeds nor the proceeds of a share of any other company which may have become a shareholder of the Mammoth Oil Co. reached, nor was it intended to reach, any individual who represented the Government.

"Notwithstanding this, I am commanded to produce books, records and papers revealing the organization, financing and administration of any such company. These are not my personal affairs alone, but are the concern and vital interest of many others. They are essentially private in their character and lie at the base of the stability of these companies.

"I am not the least unwilling to produce these except an unwillingness which arises from my desire not to disclose the legitimate affairs of myself and those I represent. I cannot conceive that you will require me to produce in a public inquiry the evidence of those business relationships; those vital affairs of business; and in general all of those internal, delicate and complicated operations which constitute so large a part of any business.

"I am engaged in the management of independent oil enterprises whose difficulties are obvious enough without having those difficulties increased by a general ploughing through the private affairs of such enterprises in a public inquiry."

Albert B. Fall, who was Secretary of the Interior Department when the lease was approved, denied that any consideration had been sought or given in connection with the transaction. From his bed in a local hotel, where he is confined by ill health, Mr. Fall sent a statement to the committee reviewing in detail phases of his business and personal affairs which have been brought into the hearings by witnesses.

TO OPEN CALIFORNIA OFFICE..

W. G. Cummings, of the Gas Engineering & Construction Co., with offices in Pittsburgh, Tulsa and Casper, Wyo., recently returned to the Tulsa office from a two weeks' trip to the California oil fields, where he investigated conditions with a view toward opening an office in that territory.

The Gas Engineering & Construction Co. is the sales agent for Clark direct-driven gas engines and compressors. The Empire Gasoline Co., of Bartlesville, Okla., recently purchased another 80 h. p. Clark compressor to be installed as an addition to one of their Kansas plants.

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Manufacturing Stationers
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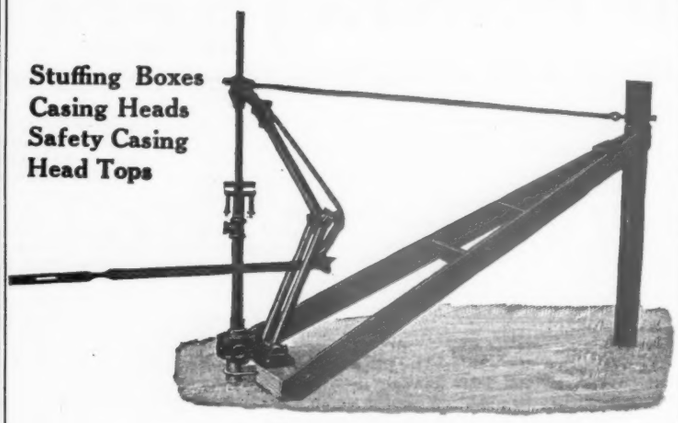

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SINCLAIR OBTAINS OIL CONCESSION IN PERSIA

(Contiued from Page 19)

loan for Persia during the various stages of the rivalry for the concessions. Now that an American concern has won it remains only for the Persian Parliament to ratify the award before the loan can be made. Among the reasons that have been advanced for Persia's desire for an American loan is that these funds would make her independent of British capital and therefore of British influence.

Terms of Concession

According to the terms of the act of the Persian Parliament under which these concessions were to be granted, published in The Oil and Gas Journal of December 6, in addition to the right to exploit and refine petroleum, asphalt, natural gas and related substances, the concessionaire would have the non-monopolistic right to market these substances within the boundaries of Persia. The concession would be for a period of from 40 to 50 years, its exact duration to be defined by discussions between the concessionaire and the Government.

Within six months after the concession becomes legally effective, the concessionaire must send experts to Persia to make geological researches, and within three years necessary maps and reports must be furnished to the Government. Within eight years the concessionaire must spend at least $800,000 gold for wages, supplies, necessary engineering work, exploration, drilling, etc., at least $300,000 to be spent within the first six years, and the total of $800,000 within the first eight years. Within this eight-year period the concessionaire must submit to the Persian Government a list of lands selected for exploitation, the "selected areas" in each province not to exceed 15 per cent of the total area and the remaining lands to be returned to the Government.

Drilling operations upon at least two oil wells must begin within six years and thereafter drilling must be undertaken upon at least one new well every two years. These wells must be continued to at least 2,000 feet unless oil is found in commercial quantities. Should the finding of oil prove insufficient for commercial purposes the concessionaire may surrender the concession after three years of exploration work, but in case of such surrender he is barred from all further rights to exploit the "Four Provinces."

The concessionaire may organize one or more companies under the laws of Persia or the United States, and transfer its rights to such companies.

The concessionaire must refine in Persia enough petroleum to satisfy local consumption, the purchase price of the refined products to be cost plus 10 per cent. The royalty to the Government is to be at least 20 per cent of the net profits and if excess profits are derived the Government's share is to be increased, ranging from 21 per cent when the profits are between 60 and 75 per cent of the invested capital to 28 per cent when profits are in excess of 115 per cent of the invested capital.

SENSATIONAL RISE IN GROUP 3 GASOLINE

(Continued from Page 22)

again ahead of them with their price advances and little business was placed except small orders for prompt shipment which the buyers had to have. There were some attempts to buy gasoline for January delivery. The prices asked were generally too high and the month opened with comparatively little business placed for delivery over the month.

The famine in naphthas and 60-62, 400 gasoline continues. Scattered sales of the latter were made as high as 10 cents. Buyers generally state, however, that they are unable to secure quotations on their product. Very few orders for the higher gravity gasolines were placed with price advances approximately the same as that of New Navy.

Natural Gasolines and Blends

All grades of natural gasolines and blends advanced. Some natural gasoline manufacturers were asking 9 cents for Grade A gasoline. No sales were being made at that figure although there is a scarcity of that grade. Several buyers who are accustomed to buy from week to week are out of the market but a fair movement is reported from all the large plants. Chestnut & Smith Corp., the largest manufacturers, are still in the market with small purchases.

There was practically no blend material during the past week. There is a good demand but blenders are still unable to buy the needed naphtha. Some have material purchased ahead and they are disposing of their output at prices which are experiencing the same advances as the straight run products.

Kerosene and Distillates

Although kerosene did not advance as much as the gasolines there was a scarcity of the 42-43 water white grade. None was available under 4¾ cents and many refiners were selling for 5 cents. The weekly reports of the Western Petroleum Refiners Association shows that the statistical position of this product has improved recently with a movement during the past two weeks which has exceeded the output. Distillates prices are higher. With the cold weather general in the Middle West refiners are expecting a real test of the consumption requirements of this product. In the event there is noticeable improvement in demand still higher prices are to be expected. This enlarged demand would also help the kerosene market as refiners would curtail their kerosene output to save the distillate.

Fuel and Gas Oils

Both fuel and gas oils of all grades are higher. The stocks of fuel and gas oil in the Mid-Continent area have shown a consistent decrease for several weeks and there are now very few plants which have any material to offer on the spot market in Group 3. There is a good demand within the group for spot shipments and many refiners are moving what little they have available from 10 to 15 cents above the market. This situation has obtained so long that many buyers who require large quantities and ship long distances do not consider Group 3 in their purchases. There was nothing unusual about the gas oil movement during the past week but, largely as a reflection of advances in other products, prices have been raised.

Neutrals

A substantial increase in Mid-Continent crudes will result in higher prices for all grades of neutrals as it has in Pennsylvania, according to the general opinion of the trade. The few refiners in this group who have lub plants are understood to be awaiting a crude advance before seeking higher prices. The demand for neutrals continues strong.

FIRE AT WHITING REFINERY

CHICAGO, Jan. 1.—Damage estimated at nearly $1,000,000 was done by a fire at the Whiting, Ind., plant of the Standard Oil Co. of Indiana, late today. The machine ships and boiler works, including several buildings and most of the machinery in them were practically destroyed and 30 storage tanks, containing about 900,000 gallons of gasoline were threatened by the flames. Spontaneous combustion of oily waste in the machine shops is believed to have been responsible.

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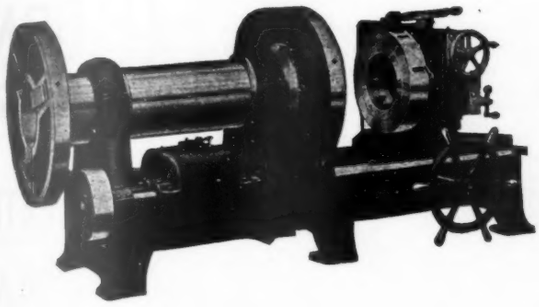

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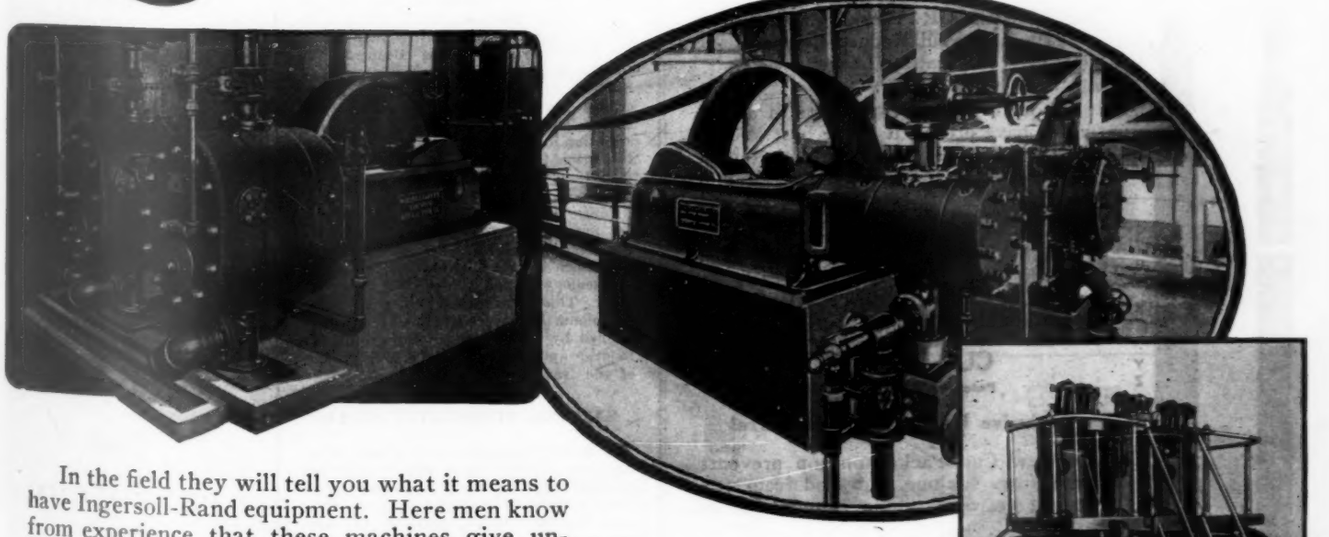

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Dozen Small Wells And Seepages of Oil Alaskan Indications

The only oil produced in Alaska in 1923 was obtained from a dozen small wells, one of which was drilled during the year on the single patented tract of petroleum land in Alaska, in the Katalla Field. These wells are owned by the Chilkat Oil Co., which finds a ready local market for its product in the form of gasoline produced in its own refinery.

The search for oil has been continued, but except in the Cold Bay Field there has been no drilling in new fields during the year. Drilling was in progress during 1923 at Pearl Dome, 18 miles from the coast. Here the Associated Oil Co. sank two wells, about 500 and 950 feet deep, but suspended drilling in June. The Standard Oil Co., drilling on the same structure, reached a depth of 300 feet by August and is reported to have reached about 700 feet by November. The company began the installation of a second drill in August. George C. Martin, who hastily examined the Chignik region, south of the Cold Bay Field, reports that what is known of the geology near Chignik is not favorable to the presence of petroleum. Kirtley Mather, who made a geologic survey of the northern part of the Alaska Peninsula, reports that some of the structures and the formations are favorable to the presence of oil. A small seepage has long been known in the region near the mouth of Douglas River, which flows into Cook Inlet.

Sidney Paige last summer made an examination of the oil seepages which have long been known near Cape Simpson, about 50 miles southeast of Point Barrow, the northernmost point of Alaska. He reports that there are two very large seepages emanating from small ridges about a mile apart and several miles from the coast. These are marked by flowing petroleum, and cover many acres. There is a very large accumulation of petroleum residue at these seepages. The surface exposures consist of clay shales with hard thin partings of calcareous shale which lie nearly horizontal, and are probably of Jurassic age.

Mr. Paige and his two sub parties explored a large area inland from the Arctic Coast between Cape Beaufort on the south and Point Barrow and Cape Simpson on the north. He himself ascended the Meade River for some 150 miles. These surveys indicate a wide distribution of what is believed to be the formation from which the Cape Simpson seepages emerge, which is probably of Jurassic age. These rocks near the north Atlantic Coast are little disturbed, but are increasingly folded to the south, toward the mountains. No other seepages have been found, but what is known of the geology is not unfavorable to an oil field. This entire region lies in Naval Petroleum Reserve No. 4, and it was examined by the Geological Survey at the request and expense of the Department of the Navy.

SALTING AUSTRALIAN WELL

A Reuters telegram from Perth, West Australia, says: Upon the Government analyst reporting that a sample of oil from a bore on the edge of Lake Eva, near Southern Cross, consisted of vaseline, soap, and lubricating oil, an inspector of mines and detectives visited the bore, and reported finding under the bunk of the supposed discovery a large hole, in which was a 100-gallon tank containing 80 gallons of oil, from which pipes led 46 feet in the bore. The man fled after the first analysis, and warrants have been issued for his arrest and that of his companion. It is reported that the alleged discoverer claimer that the original discoverer was a German, who was unable to return to Australia after the war, and had sent him the plans.

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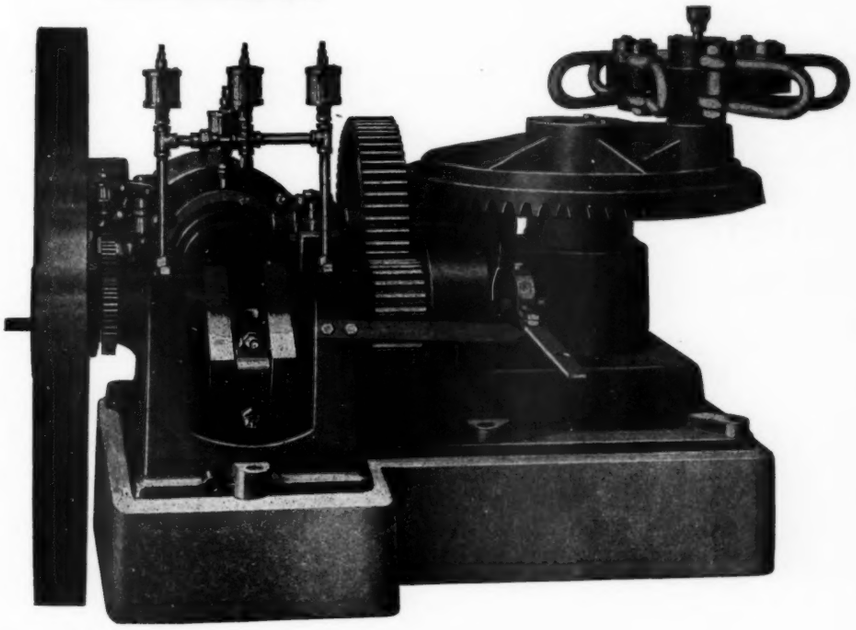

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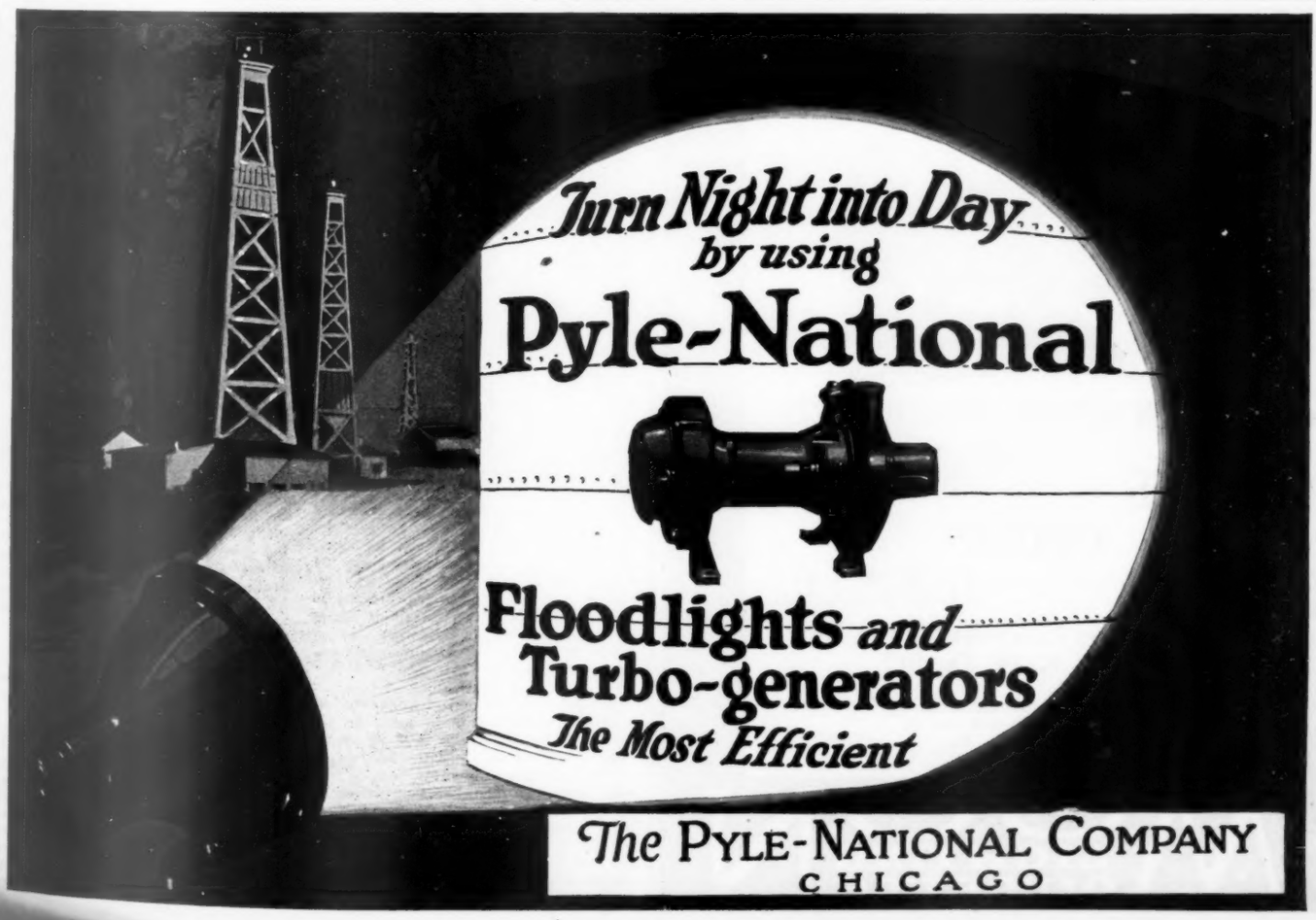

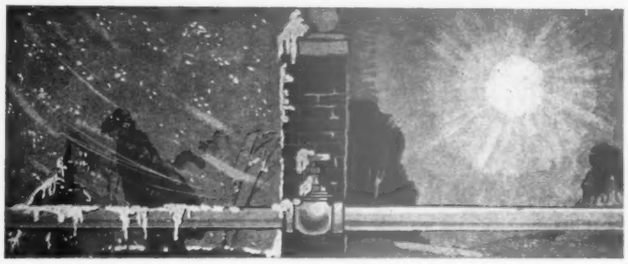

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MOON LIGHTING OUTFITS

REMOVAL OF PARAFFIN DEPOSITS FROM WELLS

(Continued from Page 28)

contain such large proportions of silty carbonates that they effervesce and melt away in hydrochloric acid, yielding clean oil after the foreign matter has gone into solution. Most of the so-called paraffin troubles in oil wells are caused by the deposition of hydrocarbons comparatively free from water and silt, but the fact is emphasized that some of these paraffin troubles are, in part at least, water troubles that must be met on that basis.

Preventing Paraffining

Regulation of Fluid Level—Recognizing the causes and effects of paraffining outlined, the following methods have been used or suggested in order to eliminate the causes and to prevent or overcome their damaging effects. Probably the most common method of preventing or retarding the paraffining of a sand in a pumping well is to tube the well high enough for the sand to always remain covered with oil. This prevents to some extent the chilling effect of expanding gas and it is believed that the solvent action of the oil helps to keep the face of the sand clean.

Should the well make water, it can be tubed with the working barrel a short distance above the top of the sand and the perforation set near the bottom of the hole with a flood nipple immediately under the working barrel. This enables the operator to pump down the water which collects each day and prevents him from pumping the well below the flood nipple. By this method the sand will always remain covered.

Regulation of Back Pressure

By maintaining as high back pressure on the wells as is possible without interfering with the recovery of oil, it should be possible to diminish the chilling by diminishing the expansion of gas in the wells. At the same time the paraffin would be more soluble on account of the higher pressure. The back pressure in pumping wells might best be held by tubing the well high and thus maintaining a column of oil in the hole rather than by pumping the well down and holding the back pressure entirely by a closed casinghead. By keeping a column of oil in the hole the operator gains the two advantages of maintaining back pressure and keeping the sand covered. The problem is different in flowing wells where the productive sands remain covered by oil most of the time, the chilling and drying effects of the expanding gas at the bottom of the well thereby diminished and the gas pressure being sufficient to help dissolve or blow off the paraffin that might otherwise plug the sand. Paraffin troubles with flowing wells generally result from the plugging of the upper parts of the tubing and casing, as well as the flow lines.

Paraffin that plugged the two-inch tubing in a flowing well in the Salt Creek oil field, Wyoming, in one to two weeks was overcome by closing in the well for 24 hours, thus raising the pressure to 450 pounds per square inch, and then allowing the well to flow wide open through the tubing for the next 24 hours, and repeating these changes every 24 hours. So long as this cycle was repeated the tubing remained practically free of paraffin. The Bureau of Mines is conducting an investigation of the effects of regulated back pressure upon oil production.

Use of Heaters

Another possible method to prevent or diminish paraffining is to heat the interior of the well while it is in operation. This should afford the advantages of continually washing the face of the sand with the inflowing fluid while at the same time maintaining a temperature high enough to prevent the deposition of paraffin while it is being pumped from the well along with the oil. Steam and electric heaters may be developed for this purpose. Several companies have experimented with electrical heaters, but numerous mechanical and electrical difficulties have interfered with the success of this method. Up to the present time electrical oil well heaters have not come into general use, although favorable progress and some successful results are reported by companies engaged in developing and testing this type of heater.

Steam introduced between 2-inch tubing which is run inside of 3-inch tubing, as described elsewhere in this report, might prevent paraffining, but the method is costly both in equipment and operation. It should work best in shallow wells, because in deep wells the excessive condensation of steam is a serious drawback. The practical value of the method should be determined by adequate trials, preferably in shallow fields.

Methods of Removing Paraffin

Classification of Methods—After the paraffin has accumulated in a well sufficiently to cause trouble, it can be removed by the usual pulling and cleaning job, by the paraffin auger, by reaming the oil sand, by shooting, by the introduction of chemicals to heat, melt and oxidize the paraffin, by melting the paraffin with steam, hot water, or hot solvents, and by burning out the paraffin. The pulling and cleaning job is too well known to require comment at this time. The paraffin used to warrant further description here. Several different devices for reaming oil sands to remove paraffin have been patented and widely advertised. Favorable results are claimed for these devices but mechanical difficulties are involved in their use. They have not come into general use.

Shooting—Engineers of the Bureau of Mines have made some preliminary investigations into the matter of removal of paraffin and similar residues from wells, and it has been found that the most successful and positive method of removing these residues from the face of an oil sand is by shooting. This probably gives the combined effect of melting and burning the paraffin and breaking down the face of the sand, accompanied by more or less fracturing. Ordinarily squib shots are placed in the hole in 1½-inch shells, which are in reality so-called anchor shells for full-sized shots. From 5 to 10 quarts of nitroglycerin is about right for sands varying from 15 to 40 feet thick. Generally as much glycerin would be placed opposite the producing sand as would be contained in a 1½-inch shell, having a length of about three-quarters of the thickness of the sand. If the well is drilled below the oil sand the shot should be anchored so as to be set opposite the sand, or the hole bridged and the shot placed on the bridge. In either case the hole should be filled with water at least to a level above the shot so that the force of the shot will not be wasted. It is also necessary that the operator use care in shooting, lest he damage his casing.

Too heavy and too frequent shooting hastens the enlargement of the shot cavity and causes the excessive caving of soft sand that must be cleaned from the hole. The continued enlargement of the shot cavity renders further shooting ineffective except as it causes more caving. In some fields shooting tends to damage the wells by tightly packing the sands. Again, casing seated close to the top of the oil sand may render shooting impracticable. Conditions such as these call for other methods of removing paraffin.

Use of Solvents

The introduction of one to three drums of gasoline to dissovle the paraffin has given only partial success because the paraffin is not readily dissolved by gasoline. Benzol is a more effective solvent than gasoline for some of the so-called paraffins. Both crude oil and kerosene also exert a solvent action on the paraffin, but none of these solvents has the cleansing action that is desired. Generally, these solvents are most effective when hot, especially if they

(Continued on Page 118)

The Leidecker Patent Chain Boiler Mounting

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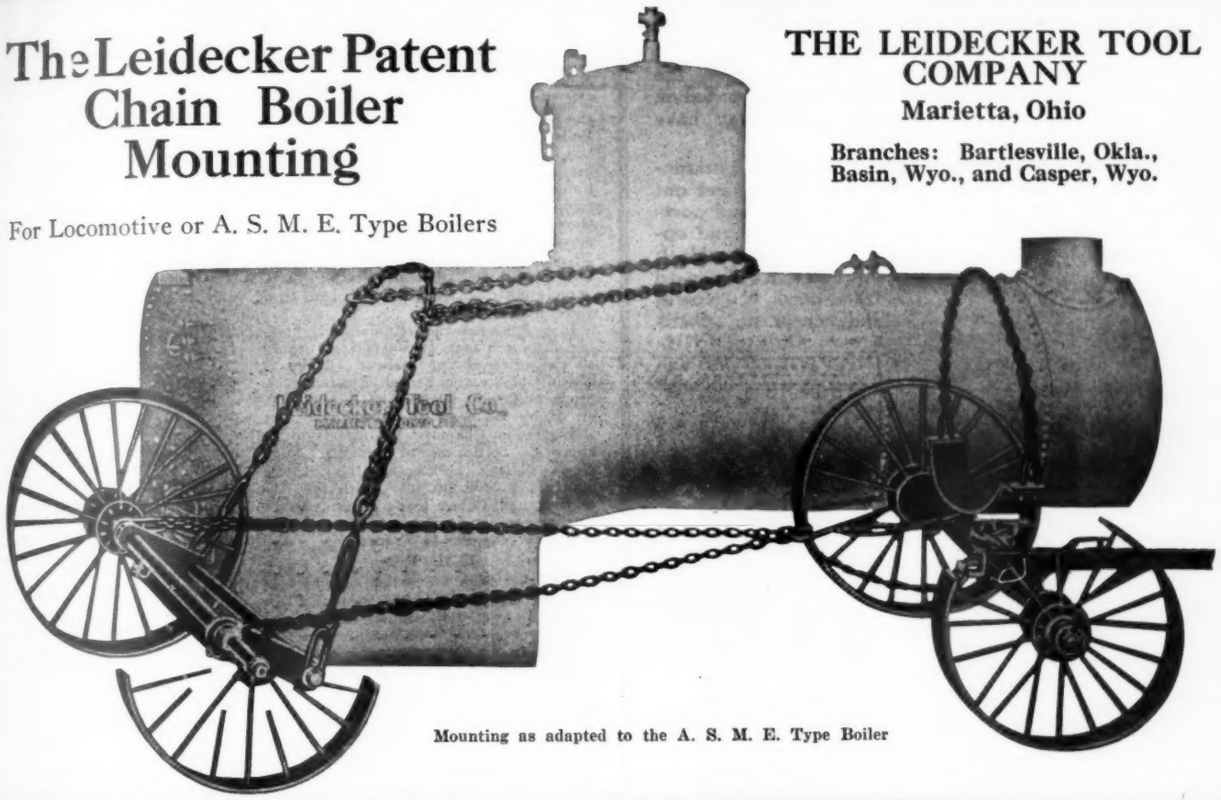

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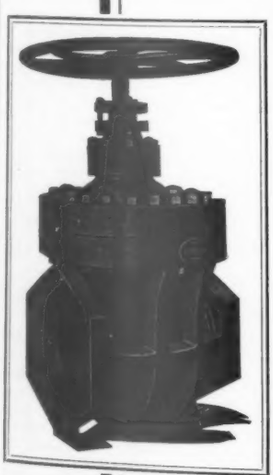

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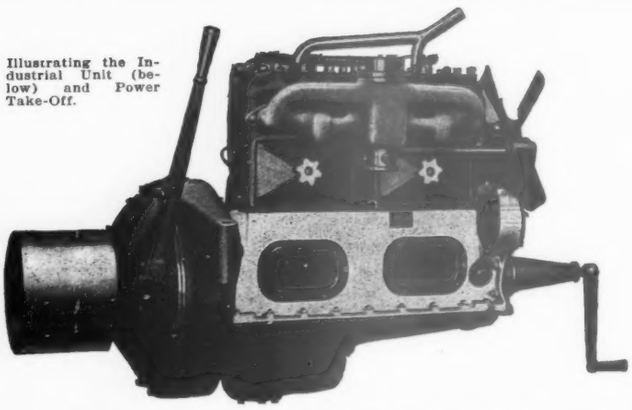

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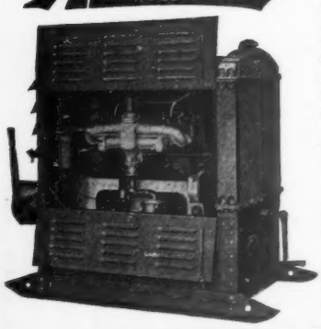

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WHY FRANCE IS SEEKING CONTROL OF THE RUMANIAN OIL FIELDS

Rumor has been busy about French plans for loaning money to Rumania in return for oil concessions. It is France's object to make sure of a regular oil supply from the Rumanian fields even as she has already made sure of it from the Polish under the convention of February last, giving special advantages to French companies operating there. But in the Polish oil fields France was already strongly established, and the French Government has been acting as foster-parent to the Polish. In Rumania French interest in the oil wells is relatively small and there are strong rivals, notably British. So the problem is a more difficult one.

It is reported that Rumania is holding out for a loan of 800,000,000 francs as the price of her consent. There is already before the French Parliament a proposal for an advance of 100,000,000, on which the Senate is expected to act shortly, the Chamber having given its approval. In the case of Poland the loan, also awaiting action by the Senate, amounts to 400,000,000. Both the Rumanian and Polish loans as laid before Parliament are for the purchase of war and other supplies in France.

Oil the Prize

But the prize for which the nations are fighting in Rumania is really the exploitation of the State oil lands extending over 60,000 acres and therefore seven times as big as the area now under development. The new Rumanian constitution, which prescribes the nationalization of the sub-soil, awaits interpretation in a law to govern concessions of the oil lands other than those already being worked, and much mystery has been made of the terms of it, for it has already been drawn up. It appears, however, the idea is to grant the concessions to existing companies on a scale fixed by considerations of the nationality of their capital and personnel, their age and their financial resources. At the same time the state will participate in the management and profits. Foreigners hope to be admitted on equal terms with Rumanians, though the government at one time contemplated developing its own lands through its own resources. That has now been recognized as beyond its powers and therefore its efforts are to distribute the concessions in such a way as to prevent monopoly by any of the big trusts.

Presumably in anticipation of favors to come there has been notable concentration of forces between French and Belgian oil interests. The Banque de l'Union Parisienne here recently combined with the Belgian Petrofina Co., which controls various oil companies, including a Dutch one. The ultimate plan is to form a consortium of all French interest in Rumania. French, Belgian, Dutch and English interests are also grouped in what is known as the O. P. Q. Syndicate, which notably includes the Banque de Paris et des Pays Bas and the Royal Dutch. It is likely that Rumanian participation will be invited by the various foreign groups in order to propitiate national sentiment.

International Rivalry

The French aim is a double one. First, the government would like to free itself so far as possible from dependence on the British and American trusts. Secondly, it would like to see French interests multiply in central Europe, thereby strengthening its influence with the Petite Entente and adding to its means of defense against Germany in the future.

But apart from the government, it is vital for French industry, particularly the metallurgical, to secure markets in central Europe. By lending money to Rumania or Poland, France secures oil and also orders for war and railroad material. In respect of interest she gets only 5 per cent, while she is paying 7½ per cent on the money she has to raise at home in order to furnish these loans. But if the 5 per cent can be guaranteed by export duties on oil, it becomes necessary for Rumania and Poland to develop these exports as much as possible. And if French companies can secure big interests in their oil wells, the development of the export trade benefits them and thus France, which is compensating for the difference between 5 and 7½ per cent.

Rumanian oil production developed from 250,000 tons at the beginning of the century to 1,885,000 in 1913, of which more than 1,000,000 were exported. The war played havoc with the oil wells and in 1917 production was down to 527,000 tons. Since 1919 it has been increasing, and last year the output reached 1,331,000 tons.

PETROLEUM RESOURCES IN PACIFIC REGION

A discussion on the oil and water resources of the Pacific region occupied the attention of the geology section of the Pan-Pacific Congress held at Sydney, NSW. The cause of the delay in the discovery of oil in Australia was not the absence of oil, but almost complete absence of such unmistakable seeps as to strike the eye of the bushworkers, said Dr. H. J. Jenkins, in the course of a paper.

The reason of this was that Australia contained untapped oil fields in full maturity, and not in process of destruction or almost wholly ruined by earth flowing movements in which seeps were naturally most plentiful. The great basin of Queensland was a sealed basin. The probable oil formations out-cropped only in the highlands of the Dividing Range, where elevation and gravitational forces prevented seeps. The lower Walloon in southern Queensland and the upper Permian in central and northern Queensland were, in all probability, oil-bearing. The Roma "wet" gas, from which petrol had been condensed, and the oil seep in a bore near Beaudesert, were two of the most palpable pieces of evidence of oil.

CROWDED PIPE LINES DEMANDING RELIEF

OIL CITY, Pa., Dec. 29.—Ever since the recent increases in the price of Pennsylvania grade crude oil, producers of that oil have been holding their production in pipe line storage and refusing to sell until higher prices are announced. This has resulted in a serious situation so far as some of the pipe lines are concerned. Officials of the National Transit Co. state that the situation as to that company's storage is now such that unless some relief is given, so the pipe line company can obtain some storage room, it will be obliged to curtail runs. They state the only way in which this relief can be given is through actual deliveries of oil to consumers.

So far as the National Transit lines are concerned the producers must sell either some of their oil or be forced to curtail their runs in the near future.

NO BRITISH GASOLINE TAX

Substitution of a gasoline tax in place of tax on horse-power to raise revenue from automobile owners has been abandoned by British Government experts. The committee which has studied the plan since early spring will recommend against it. Its report will admit that the plan is favored, but will say no definition of motor spirits is possible under which evasion of the tax would not occur. This is a victory of oil interests. Automobile manufacturers wished the tax burden to rest not on the machine but its use. Had the gasoline tax been adopted it would have helped American cars which because of higher horsepower must pay much heavier taxation than most British cars.

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Anglo-Persian Shows Gain in Production And Refined Output

Anglo-Persian Oil Co.'s production in the year ended March 31, 1923, was 2,959,029 tons (20,713,203 bbls.). In the current fiscal year it will probably total 3,775,000 tons (26,425,000 bbls.) and in the year following 4,500,000 tons (31,500,000 bbls.), according to Sir Charles Greenway, chairman.

The main program of the company's distributing organizations has been completed. The output of the refinery in Persia has been disappointing. Defects in the plant, due to continuous running during the war period, became apparent and necessitated stoppages. Moreover, the work entailed in remedying these conditions and in completing the extensions in progress has been seriously hampered by outbreaks of cholera and plague.

The refinery at Llandarcy, Wales, continues to give satisfactory results, and the throughput has shown a steady increase. The plant necessary to deal with a portion of the throughput on a fully refined basis, i.e., for the manufacture of lubricating oils, wax and other by-products in addition to fuel oil, petrol, and kerosene, has been installed and is to some extent in operation. A plant is also in course of erection to deal with light distillates from the refinery in Persia, leaving the heavy distillates for the eastern fuel oil markets, where better prices are obtainable.

The refinery erected by one of the companies with which the company is associated in France has been completed and is working satisfactorily. The refineries now being erected in Scotland and in Australia are approaching completion and are expected to be in operation early next year.

Production from the Persian fields operated by the subsidiary companies has been well maintained during the period, and is now being increased to deal with the expanding off-take of the company's refineries. Test drilling in an entirely different area is reported to indicate the existence of a new oilfield which it is intended for the time being to hold as a reserve.

Results of drilling operations outside of the original Persian concession have so far proved unsatisfactory. In the case of the Argentine two of the areas on which test drilling has been conducted have been definitely abandoned, but work is meantime being continued on the other two areas.

UNION OIL EXPANDING

LOS ANGELES, Dec. 31.—Union Oil Co.'s $500,000 development program for 1924 includes construction of a loading dock, in addition to four refinery units and an asphalt plant at Harbor Boulevard plant, Los Angeles harbor, the oldest and one of the largest in southern California. A number of filling stations will be built. The Union Co. let a contract a month ago for the dredging program as part of development, and is negotiating for leases on four berths in addition to the two it has.

STROUD'S 1,970-BBL. WELL

A well that gauged 1,970 barrels during the first 24 hours was the pleasant Christmas gift received by the J. A. Hull Oil Co., when its No. 1, in the NW cor. Section 12-14-6, in the Stroud district of Lincoln County, a diagonal offset to the Union Petroleum & Supply Co.'s discovery well, was drilled into the Wilcox sand at 4,077 feet Monday afternoon. On Christmas day it was deepened to 4,090 feet, where its flow increased. The Ozark Pipe Line Co. is taking the oil.

AMERICAN KEROSENE IN CHINA

American kerosene displaced to a large extent the Burma product in the district of Yunnan, China, the figures of the former increasing by 57,000 gallons, while the latter fell off 14,000 gallons, according to the 1922 customs report.

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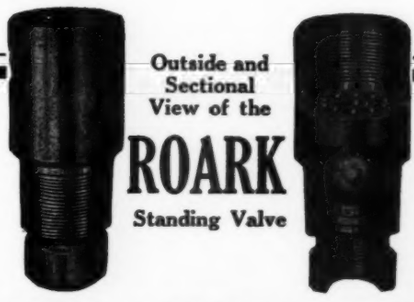

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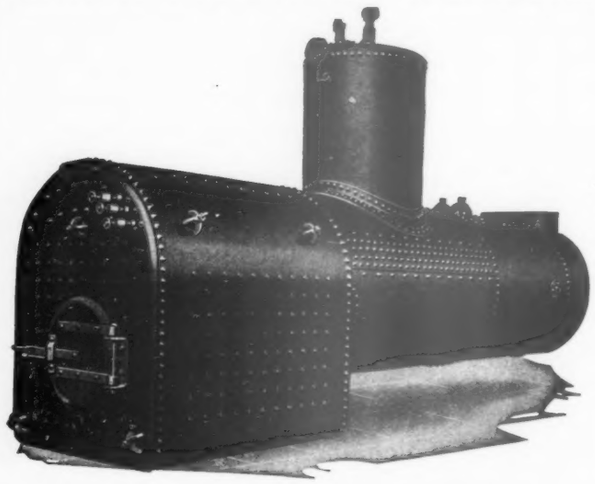

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These pictures show a Turbinair Hoist handling 5x20 ft. plates, weighing 200 lbs. each in building 18 55,000-barrel storage tanks for the Standard Oil Company of New York, at Tappan, New York.

The Warren City Tank and Boiler Company, the contractor states, that the use of these hoists, instead of the old method, (a team of horses and an "A" frame), has largely reduced the construction time.

The Warren City Company uses Turbinair Hoists on all its field work of this sort.

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REMOVAL OF PARAFFIN DEPOSITS FROM WELLS

(Continued from Page 114)

are hot enough to melt the paraffin, but they are apt to deposit paraffin back in the productive sand when slightly cooled, thus complicating the trouble. A hot solvent, saturated with dissolved paraffin, will deposit some of this paraffin as soon as the solvent begins to cool. Hot solvents, with their dissolved paraffin, should therefore be bailed or pumped from a well before cooling causes the redeposition of the paraffin.

Some common methods of introducing a solvent are:

(1) Run down through tubing.

(2) Run down between tubing and casing.

(3) Pour down open casing from which tubing has been pulled.

(4) Lower in dump bailer.

The dump bailer should be especially useful for introducing hot solvents and for introducing chemicals to heat the solvents according to the methods described in the succeeding paragraphs.

The washing of a well with gasoline once every three or four years has been tried at Bradford, Pa., with moderate success, but to wash a well with gasoline or benzol more often than that may not be profitable, particularly if the well is relatively small. The use of solvents by present methods is costly to apply on a large scale at frequent intervals, and the results are not commensurate with the cost.

Steaming

Steaming to remove paraffin from the faces of the productive sands has been attempted in many fields. Steam has commonly been introduced through a single string of tubing. Probably the best arrangements for steaming is to use 2-inch tubing inside of 3-inch tubing, the 3-inch tubing being open at the bottom and extending down to a point just above the working barrel on the 2-inch tubing. Steam can then be put down the well between the 2-inch and 3-inch tubings and allowed to rise freely between the 3-inch tubing and the casing. In this way, it may be possible to heat a well sufficiently to melt and pump off the paraffin without interrupting production. The ideal condition is afforded where there is sufficient pressure in the sand to cause a fluid movement into the well while it is being steamed. The melted paraffin is then washed from the sand into the well and pumped out. In steaming a well it is imperative not to confine the steam under pressure in the well, because that tends to melt the paraffin and drive it back into the sand where it will congeal again to form a so-called "paraffin ring," plugging the sand around the well. This damages the sand worse than before. In general, steam treatment is costly and the results are not uniformly satisfactory.

Use of Chemicals

Calcium Carbide. The use of chemicals to remove paraffin and associated deposits from oil wells is only in the experimental stage. The practical value of these methods depends upon cost as well as increased production. High cost is one of the principal obstacles to success. Calcium carbide is one the chemicals reported to have been tried in the shallow fields of eastern Kansas. In this method, from 100 to 200 pounds of this reagents were placed in cylindrical wire gauze containers of the proper size to be lowered to the oil sand. Water occuring in the hole, or put in for the purpose, reacted with the carbide, thus generating the heat which melted the paraffin. The effect of this treatment is said to have been beneficial.

Caustic Soda and Aluminum. A patented process wherein a mixture of caustic soda (sodium hydroxide) and metallic alumium is dumped down the wells, or is lowered in a dump bailer, also depends upon the generation of heat to melt the paraffin when the mixture comes in contact with water. The water occurs naturally in the hole or is put

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in for the purpose. Successful results are claimed for this process. It has been applied extensively in the old Pennsylvania fields.

Sodium Peroxide. The Bureau of Mines has been experimenting with the use of sodium peroxide for the removal of paraffin from oil wells. From 100 to 200 pounds of the reagent are introduced into the well either by dumping it in at the top or by putting it down in wire cloth, tin or glass containers. One or two barrels of water are also run in, if the well does not already contain water, for water is essential to the reaction. Although experimental work is not complete the results of these preliminary experiments indicate favorable possibilities. Experiments by individual operators in different parts of the Appalachian and Mid-Continent Fields afford further encouragement in that the rates of production of several wells were increased from 50 to 100 per cent by cleaning them out with sodium peroxide.

Upon immersion in water, this reagent generates intense heat and liberates oxygen which supports combustion. Hydrogen and oxygen which are liberated through the decomposition of the water also burn. The paraffin is probably removed from the face of the oil sand both by melting and by burning.

Sodium peroxide is dangerous in that it sets fire merely upon contact with water or damp objects. The use of this reagent would be especially dangerous around wooden derricks or other inflammable structures. In shipping and handling it extreme care must be taken to keep it from contact with water or inflammable substances that are moist. The cost of the reagent is approximately $30 per 100 pounds.

Hydrochloric Acid

The Bureau of Mines has experimented with the use of hydrochloric aid following the treatment of a well with sodium peroxide. The purpose of this acid treatment was to dissolve calcium carbonate which, together with paraffin, plugged the pores of the sand around the walls of the hole. Several carboys of concentrated acid were dumped into the well by inverting the carboys on top of the open casinghead, and allowing the acid to run down the casing. (A dumb bailer might be used to keep the acid off the casing.) The acid was introduced after the sodium peroxide had stopped its violent reaction. The introduction of the hydrochloric acid which mixes with the sodium hydroxide resulting from the preceding reaction gives another violent reaction with considerable heat. By adding an excess of acid, the calcium carbonate, silt, crusts, and interstitial matter is cleaned out by being dissolved. The acid may be permitted to stand in the well a few days but should then be bailed out together with loose sand, silt and water.

Sulphuric Acid. Sulphuric acid should not be used in oil wells because of the danger of plugging the sand with precipitated sulphate salts, more especially calcium and barium sulphate.

Other Possible Reagents. It is possible that liquid oxygen can be used successfully for the removal of paraffin from wells. Metallic sodium, and combinations of sodium and aluminum, sodium peroxide and aluminum, calcium carbide or powdered carbon and sulphur together with sodium peroxide and numerous other reagents and combinations of reagents designed to produce heat in the oil well may also be found useful for cleaning out paraffin. The subject is one for extensive investigation.

Use of Solvents and Reagents

The increased solvent action of hot gasoline, benzol and other solvents has been pointed out. These solvents can be heated by steam or other methods and lowered into the well by the dump bailer. Possibly a more effective method would be to put the gasoline in the well and then run in a heat generating reagent such as sodium peroxide. For the oper-

(Continued on Page 123)

STOP WASTING OIL

Tight steel roofs on your oil storage tanks reduce evaporation losses by 70%. The average annual losses where leaky roofs are used amount, according to U. S. Bureau of Mines Bulletin No. 200, to 2% to 3% of the volume where crude oil is stored and 4% to 5% for gasoline. The portion evaporated from crude oil in storage is in reality not crude oil but merchantable gasoline.

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Mexican Eagle Stops New Exploitation in Mexican Oil Field

Mexican Eagle Oil Co. has decided not to declare an interim dividend on the 8 per cent non-cumulative participating preference shares or on the ordinary shares in respect of the year ending December 31, 1923. This dividend has been paid since 1911, and during the year when the company was making a favorable showing, large extra dividends were paid on it, ranging as high as 52 per cent in 1920. The par value of the shares is $10 (Mexican).

Because its production in Mexico has declined to practically nothing, and results in its prospecting work have been disappointing, London reports say the Mexican Eagle Oil Co. has decided to stop all new exploitation in the Mexican oil fields. Work under way on the wells now drilling will be finished.

Mexican Eagle was the premier oil company of Mexico, having entered that country about 20 years ago. At one time it had a production of more than 150,000 barrels a day of light oil; its present output is around 12,000 and steadily declining. In order to keep its refineries in Mexico running, Mexican Eagle has found it necessary in the last several months to bring in oil from California.

Mexican Eagle Co. was developed by the Lord Cowdray interests. The investment of Mexican Eagle in Mexico amounted to more than $100,000,000, which was spent on producing properties, pipe lines, refineries, tank steamers and marketing stations. Of that amount, $82,000,000 was raised through the sale of securities. In 1919, stockholders supplied $35,000,000; in 1920, $15,000,000 was raised through the sale of subsidiary company notes, and in 1922, the company raised $31,700,000 through the sale of 7,000,000 shares of first preferred stock.

In 1920 and 1921, the company spent $65,000,000 on properties. The refining capacity was increased, for which purpose $30,000,000 out of the total of $65,000,000 was spent, bringing the refining capacity up to 150,000 barrels a day, storage to 12,000,000 barrels and for new pipe lines. An additional $35,000,000 was spent in building tank steamers and providing marketing facilities outside of Mexico. Its tank steamer fleet is of 419,000 deadweight tons. At the present time Mexican Eagle has about 750,000 barrels of light crude in storage.

Mexican Eagle is the second large company practically to quit operations in the light oil fields of Mexico. Standard Oil Co. of New Jersey, which went into the field several years ago, withdrew a year or two ago when its production fell to nothing.

MISSOURI OIL MEN TO MEET

The mid-winter meeting of the Missouri Oil Men's Association will be held at the Hotel Statler, in St. Louis, Thursday, January 10. Both jobbers and refiners have been invited to attend and the program will contain much that is valuable to both branches. Several talks by men who have made a life study of the industry have been arranged, according to George S. Allee, secretary of the association, and other topics that have been suggested by the jobbers of Missouri will be discussed. Anyone who has a particular problem that he would like to have answered is urged to advise Mr. Allee as early as possible so it may be submitted at the meeting for general discussion.

BRITISH MOTOR GROWTH

There is £100,000,000 invested in the British motor industry, which employs 100,000 men, according to Sir W. Joynson Hicks. In 1913 there were 260,000 motor licenses, now there are over 1,000,000. Revenue from licenses in 1913 was £2,000,000. This year it will be well over £12,000,000.

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Geologists Moving For Re-establishment Of Oklahoma Survey

A move is being initiated by geologists and oil producers to reestablish the Oklahoma Geological Survey, with a new personnel, to serve the oil interests of the State. The previous Legislature appropriated $110,000 to maintain the survey for two years but this appropriation was vetoed by Governor Walton. It is desired to have an appropriation made by the Legislature in January to support the survey until June 30, 1925.

A number of unpublished reports and maps have accumulated in the files of the Oklahoma Geological Survey. These include reports on the geology and possibilities of oil and gas in portions of Craig, Nowata, Rogers, Washington, Cimarron, Lincoln, LeFlore, McCurtain and other counties.

The cost of maintaining a survey for a year until the biennial season of the Legislature and for publishing these maps and manuscripts to make them available to the public is estimated at $30,000. The geologists of the State have financed a colored geological map being prepared by the United States Geological Survey, scale 8 miles to the inch. The geologists have contributed over $1,700 for this map.

One project for the new Oklahoma Geological Survey would be a cooperative undertaking with the Federal Survey to make a generalized subsurface study of the oil producing district of the northeast quarter of the State, in order to make subsurface structure contour maps of the top of the Bartlesville sand, the Mississippi lime and the Wilcox sand.

An important feature of the request for an appropriation is that the survey can be made self-supporting by making available to the public bulletins and maps for purchase. A nominal charge is now made for all publications and the unpublished material will be in great demand.

GULF CO. TO DEVELOP VENEZUELA HOLDINGS

NEW YORK, Dec. 29.—The South American Gulf Co., a subsidiary of the Gulf Oil Co., has completed its contract with the Maracaibo Oil Exploration Corp., so far as selecting the properties to be drilled in Venezuela are concerned. Under the terms of the contract the Gulf Oil subsidiary was to select 100,000 acres for development. All but 35,000 acres had been selected, and negotiations for this additional amount have been closed. Drilling materials and other equipment were shipped to Venezuela some time ago. Besides a cash consideration, the property will be developed on a royalty basis. Drilling on the first well is expected to start immediately.

Drilling for oil in Venezuela has been unusually active during the recent past, especially in the Maracaibo Lake district. In the Mene Grande Field alone, according to a statement issued, production in September amounted to 425,000 bbls. against 93,000 bbls. produced last March. The Caribbean Petroleum Co., a subsidiary of the Royal Dutch-Shell Co., and the Standard Oil Co. of Venezuela, a subsidiary of the Standard Oil Co. of New Jersey, have been most active thus far in drilling operations.

GULF STATES OIL PURCHASE

Plans of the Gulf States Oil & Refining Co. to take over the Island Oil & Refining Co. properties culminated in the announcement by the corporation that slightly more than 52 per cent of the property and equipment of the Island Oil Co. had been accepted as fully meeting the requirements as to area, producing conditions, etc. Approximately this amount of the property and equipment had been pledged by the Island Oil Co. in exchange for 1,600,000 shares of the capital stock of the Gulf States Corp.

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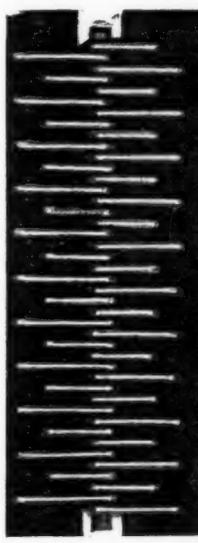

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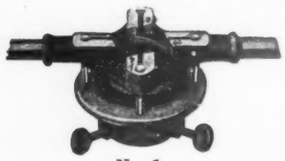
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Pan-American Sells British Holdings as Shell Gets Contract

NEW YORK, Dec. 29.—The Pan-American Petroleum & Transport Co. has disposed of its entire holdings in the British Mexican Petroleum Co. for between $3,000,000 and $4,000,000.

Following the loss by Pan-American Petroleum of the contract to supply bunker oil for the Cunard Steamship Co. at British ports, which contract has been taken by the Shell company.

Pan-American Petroleum owned half of the 3,000,000 shares, par value £1, of the British Mexican Petroleum Co., having subscribed to the stock at the reorganization of the company in 1919. On the basis of normal rates of exchange Pan-American's investment in the company was between $7,000,000 and $7,500,000, so that its loss is between $3,500,000 and $4,000,000.

British Mexican Petroleum Co. was organized as the European end of the Pan-American Petroleum organization in conjunction with some of the leading shipping and industrial interests of Great Britain. Its principal assets consist of seven tankers, oil storage stations at Southampton, Avonmouth, Liverpool, South Shields, Glasgow, and storage accommodation at Thames Haven. Its issued capital was divided into 2,000,000 shares, series A, and 1,000,000 shares, series B.

Associated with the Pan-American company were Viscount Pirrie, William Weir, Sir Thomas Royden, Sir Peter McClelland, James B. R. Morton, Sir James T. Currie and Sir Alexander Maguire. Pan-American representatives on the board of directors were E. L. Doheny, Herbert G. Wylie, E. L. Doheny, Jr., Elisha Walker and L. P. Sheldon.

Disposal of its investment in British Mexican leaves the Mexican Petroleum Co. and the Pan-American Western Petroleum Co. as the chief subsidiaries of Pan-American Petroleum. The Pan-American Western owns the California properties, and it is owned 59 per cent by Pan-American Petroleum & Transport Co. Mexican Petroleum is owned to the extent of 96 per cent or 97 per cent by Pan-American Petroleum & Transport.

Mexican Petroleum Co. has been the principal source of income for Pan-American & Transport Co., comparatively small income being returned by the California operations. Mexican Petroleum is now the only producer of light oil in Mexico on anything like a substantial scale, having succeeded the Mexican Eagle Oil Co., which for several years, prior to the collapse of its production, was the largest factor in light oil in Mexico.

GASOLINE PUMPS NOW ON FRENCH ROADSIDES

A recent development in the garage business in the western part of France is the installation, in considerable numbers, of roadside gasoline pumps, most of which are imported through the port of Marseille. Because of the "octroi," or town customs duty, the sale of gasoline in the towns has been restricted; in consequence many pump installations are located on the main roads just outside the octroi limits. They are well patronized, and a gradual increase in their number seems assured.

The types of pumps resemble closely those found in the United States, although the dials and measuring tanks are graduated in liters with usually a 5-liter lift. The great majority of installations are of American manufacture. Most of them are erected through arrangements with the gasoline distributing companies, which are often affiliated in some manner with the pump manufacturers in the United States. The competition among pump manufacturers is thus restricted to selling their pumps to gasoline distributors. As many of the larger gasoline combines have a financial interest in pump works, the field for independent pump manufacturers is limited to gasoline distributors of secondary importance and independent ownership.

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REMOVAL OF PARAFFIN DEPOSITS FROM WELLS

(Continued from Page 119)

ation of this method, water with which the sodium peroxide can react should underline the gasoline. If water does not occur in the well it should be introduced immediately before or after the sodium peroxide is added. Hydrochloric acid and sodium peroxide is another combination of reagents yielding a violent reaction accompanied by heat when mixed. The reactions between sodium peroxide and the water or acid, together with a possible combustion of part of the gasoline should heat the remaining gasoline enough to clean the well. The gasoline should be bailed from the hole while hot so as to avoid the redeposition of paraffin when the gasoline cools. This method should be given adequate field trials before being extensively applied.

Burning It Off

A cheap and effective method of removing paraffin from the face of an oil sand is to burn it off. So far as the writer knows this was first tried by the Smith-Dunn Co. near Marietta, Ohio, in October, 1920. Oil soaked waste was lighted and dropped down a well where the Smith-Dunn compressed air process was being used. Air and natural gas coming into the well made a combustible mixture which ignited and burned for 24 hours. The fire which was confined to the bottom part of the well was then exinguished by pouring in a few buckets of water at the top of the well. The well had apparently been thoroughly cleaned. The rate of production was about doubled.

Following this, the Bureau of Mines joined the Smith-Dunn Co. in burning out another well. The well was bailed dry, tubing run to the bottom of the oil sand, and a drum of gasoline poured down the hole. Compressed air was then forced down to the bottom of the hole through the tubing and the well ignited by dropping down some burning oil soaked waste. The fire was kept burning for several hours by supplying compressed air through the tubing. The well appeared to have been thoroughly cleaned and the rate of production was increased several times over what it was before the burning.

In order to avoid burning and parting the tubing at the bottom, it would probably be advantageous to use two or three lengths of calorized tubing which is capable of withstanding high temperatures.

The burning method holds promising possibilities, especially in shallow fields. It can doubtless be most easily applied where the Smith-Dunn or Marietta compressed air process is being used because by that process combustible mixtures of gas and air are often issuing directly from the oil sands into the wells.

These suggestions are based primarily upon present day practice and upon a few preliminary experiments that suggest other favorable possibilities. Present methods for preventing and removing paraffin and associated deposits from oil wells are not at all that is to be desired. The cost of cleaning out paraffin is high and the results seem to be only temporarily beneficial. Wells that have increased their rates of production several hundred per cent upon being cleaned, often go back to their old rates of production within three or four weeks after they were cleaned. The problem then is not only to clean the wells beneficially and economically, but to maintain the beneficial effects long enough to make the operation profitable. The redeposition of the paraffin and associated substances, especially calcium carbonate must be retarded or prevented. The problem of the effective prevention and removal of paraffin and associated residues from oil wells is one worthy of considerable investigation, and is one which the Bureau of Mines hopes to attack further in the near future.

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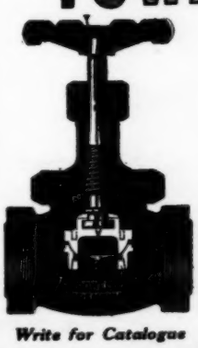
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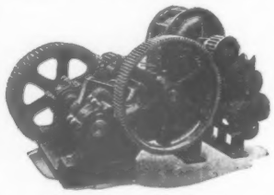

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Vast Oil Deposits Along the Amazon Says J. G. Culbertson

OIL CITY, Pa., Dec. 31.—Vast deposits of petroleum exist along the Amazon River in South America, according to John G. Culbertson, president of the Wichita Motor Corp., of Wichita Falls, Tex., who is visiting his brother, O. H. Culbertson, in Clarion and his brother-in-law, J. S. Brothers, superintendent of the South Penn Oil Co. of this city.

Mr. Culbertson has just returned from a 15-months' trip in South America. While on the East Coast he found that it would be necessary to visit the West Coast and he made the trip through the interior. He spent 10 days among the head hunters near the Andes Mountains and was the first white man to visit some of these tribes. He brought one of the small mumified heads back to the United States with him. He went up the Amazon River 1,500 miles further than the Roosevelt expedition.

Mr. Culbertson states that the entire Amazon basin, which is larger than the United States, will probably eventually produce oil, but that it will be many years before the oil development strikes very far into the interior. He states that it is his belief that it will be 50 years before the actual development of the interior of the Amazon basin is started. "It will require a much higher price for oil to make such operations profitable," he says. "The oil would either have to be sent down the Amazon River or over the Andes Mountains to reach the centers of consumption, and this would be an expensive procedure."

JAPANESE PRODUCTION 2,500,000 BARRELS

Production of oil in Japan the past year totaled around 2,500,000 barrels of oil. At first glance, says the London Petroleum World, this would appear insignificant until it is remembered that it is more than the production of Canada, Germany and Egypt combined—and until this fact is considered that this oil production has been the important source of supply for a great country which only recently has become a world power and which, with a large population, is a great industrial nation in the making.

Oil production is not on the increase in Japan; rather it has held about steady around the above figure for several years. It is stated by Japanese petroleum engineers and geologists that the possibly commercially petroliferous lands and the potential production of the nation is at least 10 times greater than the present productive area and total production, respectively. It must be remembered that Japan is a very young nation commercially and industrially, and this is one of the reasons why production has not increased sensationally of late.

Japanese oil production is sufficient to satisfy only around 60 per cent of the island empire's demand, and the discrepancy is growing yearly, fed by an ever increasing demand for the products of crude petroleum. Trucks are making their appearance in greater numbers every year. Fuel oil is coming to be looked on with value, Japan producing no coal. Steamship lines with headquarters in Japan see in fuel oil many advantages.

AUSTRALIAN OIL CO. FORMED

The Australian Government holds 250,001 shares and the Anglo-Persian Oil Co. 249,999 shares in Commonwealth Oil Refineries, Ltd., which has been organized in Australia to import and refine crude oil from Persia. Refinery operations will start early next year, and the company will establish marketing stations throughout Australia. Nine tanks, with total capacity 7,000 tons (49,000 bbls.), have been built to store benzine and kerosene.

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ASSOCIATED ABSORBS AMALGAMATED OIL CO.

LOS ANGELES, Cal., Dec. 29.—As has been expected for some time, the Associated Oil Co. is going to absorb the Amalgamated Oil Co. and its subsidiaries. The terms of the proposed consolidation were explained in detail in a recent circular letter mailed to stockholders of the latter company. The associated is to issue 4 4-5 shares of its $25 par value treasury stock for each $100 share of Amalgamated now outstanding. A stockholders' meeting has been called for December 28 to vote on the proposition but, in as much as the Associated already owns more than 50 per cent of the stock of the Amalgamated, there is no doubt as to the outcome.

For a long time the Amalgamated apparently did not make much progress but when the Santa Fe Springs and Huntington Beach Fields were opened up the company built up a substantial production in each. The Amalgamated has always operated entirely in southern California and its output for some time at Huntington has exceeded that of the Standard. The company, however, has been somewhat handicapped by a small capitalization ($5,000,000) and it is believed that the proposed consolidation will be mutually beneficial to both companies. Of the Associated's recent issue of $10,244,276 capital stock, $244,276 was sold to the Pacific Oil Co., bringing the total holdings of the latter company to $$23,276,276, or 58.19 per cent of the total capital stock of the former now outstanding. The proceeds of this issue of stock, together with those of $24,000,000 of 12-year 6 per cent notes recently issued, have been devoted to the following purposes:

To pay off bank loans of $13,160,000 and advances made by the Pacific Oil Co. of $6,000,000 during the last year and expended as follows:

Increase of storage of fuel oil and refinable products	$10,790,000
Storage facilities	3,182,000
Pipe lines	1,703,000
Floating equipment	1,555,000
Additions to refinery and distributing plants	2,530,000
Redemption at par of $5,084,000 first refunding mortgage bonds.	5,084,000
Total	$24,844,000

The balance will be used largely for the purpose of purchasing additional oil for storage and of acquiring additional facilities.

DRILLING IN DJAMBI SERIOUSLY DELAYED

It is reported from the Djambi petroleum fields in Sumatra that the development work being carried on there is delayed on account of a broken drill. Oil has not been found on either the Banjoebang or the Betoeng anticlines, although wells are already down to a depth of 300 meters at each of those places. The work of boring has been seriously delayed by slips in the various layers of earth encountered in sinking the wells, while at the lower depths there has been considerable difficulty through drills sticking in the hard rock.

The pipe line from the ground which is now being drilled, which connects with the main pipe line to the refinery at Pladjoe, has already been completed and is being tested by air pressure. The pumping stations are also completed and telephone lines have been constructed to connect the fields with the refinery. Two tanks of 500 tons' capacity each and four tanks of 120 tons each have also been installed.

The director of the work in this field has stated that so long as the wells which are now being sunk do not show any production, no new development in other fields will be begun. The Royal Dutch has also given out a statement to the effect that it is now shipping crude oil from its wells in California to its refinery in Palembang for treatment there, owing to the excessive production in the California Field.

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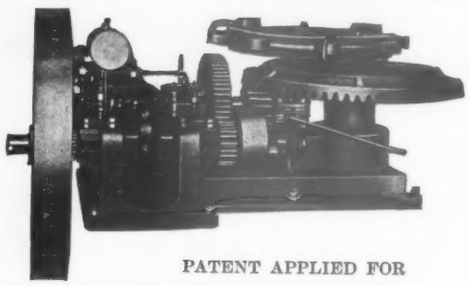

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TRAVELS THE SOFT SPOTS

Leedy Bend Tests Attracting Attention In Western Oklahoma

LEEDEY, Okla., Dec. 31.—Between the east and west elbows of the big Leedey bend of the Canadian River in Roger Mills and Dewey counties four oil concerns are making tests on what several geologists have declared to be one of the best structures in western Oklahoma. The project is interesting because major oil companies are investing their ow nmoney in it, and because over 160,000 acres were blocked as a basis for it.

Wells are being drilled by the Roxana Petroleum Corp. in the northeast quarter of Section 9-16-21, the Mutual Oil Co. of Denver, in the northeast corner of the southeast quarter of Section 1-16-21, the Colorado Oil Co., in the northwest of the northwest quarter of Section 32-16-22, and the Morten Oil Co. of Bartlesville, in the southeast quarter of Section 22-16-18.

The deepest is that of the Roxana, which, the company's geologists say, passed out of the redbeds at 2,050 feet. The present depth is about 2,600 feet. Below the redbed contact brown, gray and blue shales have alternated. These are said by H. H. Adams of Fort Worth, Texas, the geologist who directed the research made of the territory, to be in the Marine Permian formations that offer as good chance for oil as does the Pennsylvania. The elevation of this well is about 2,200 feet above sea-level and the location is at the top of one of the largest of the prairie domes that are strewn rather irregularly along the Canadian River and which exhibit themselves in a pronounced way in the vicinities of the abrupt bends of that stream.

Other Locations Made

The Morten test is on another such location, at the elbow of the Taloga bend, from which a view may be had of 10,000 square miles of the former hunting grounds of the Cheyenne and Arapahoe Indians. The Colorado Oil Co.'s location is at the western elbow of the Leedey bend, and the derrick was planted near the source and on the northern incline of a great "slump," hereabouts known as a canyon, that laid its red wall stark against the altitudinous divide, razor-back-like in its contour at this point, that separates the drainage of the Canadian River from the drainage of the Washita River. The Mutual derrick occupies another of the great rounded prairie elevations at the entrance to the area of the Leedey bend proper. The Mutual test is being drilled with rotary tools and all the others with cable tools. No more perfectly equipped outfits ever were placed so far off in a rank wildcat territory. The cable tool holes were made large at the surface and may be carried to unusual depths. Roxana officials expect to drill to 4,500 or 5,000 feet if necessary.

Geologists within the last 12 months have devoted much time to this territory. Representatives of a score of large Mid-Continent companies have been here. The area has been especially interesting since the Sayre and Panhandle discoveries and because of the availability of logs of wells drilled at Gate, Vici, Clinton, Thomas and other places in western Oklahoma as well as several in adjoining counties of the Texas Panhandle. It was an attractive area because it lay down the Canadian River from the Panhandle Field, on the south side of the river, and is contiguous to the abrupt bends of that stream.

Geological Work

Mr. Adams directed the original work and detailed field surveys and study were made by Harry Hotchkin of Chicago. Considerable work was done also by T. S. Harrison of Denver, R. A. Conkling of Oklahoma City, former chief of the Roxana geological staff, and Mr. Van Holst Pellekann of the Roxana staff. Cursory surveys made by geologists of

JOHN L. RICH
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Box 3, Ottawa, Kansas

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other staffs and their study of the basic reports are said to have convinced practically all of the feasibility of wildcatting here. Some proof is found in the fact that The Texas Co. is leasing a block of several thousand acres northeast of Leedey and is reported to have made a location for a test.

The Adams report says the division of the Permian age is exposed here consists of red sands, shales and clays, that this is underlaid by the Greer formation, about 275 feet thick, containing gypsum, shale and dolomite, and that the Woodward, Blaine and Enid formations of the Permian underlie the Greer with a maximum thickness of about 2,000 feet.

A study of logs relative to the thickness of redbeds reveals that they are 2,400 feet thick at Gate, Beaver County, 2,400 feet thick in Clinton, 2,140 feet thick in the discovery well at Sayre, and 2,112 feet thick in the Porter well in Roger Mills County. It is believed that here a depth of 3,500 feet would be considerably inside the Pennsylvania formation.

Slumps a Feature

Slumps constitute an interesting feature of this territory and their existence probably would mislead the average layman looking for structures. A succession of them, running southward principally, is found with their sources attached to the great bulk of uplift that is backed up along the Canadian River. One of the deepest and most pronounced has its source near the western elbow of the Leedey bend, on what is known as the Rome structure, and makes a nearer approach to the Canadian than the others. Geologists say these slumps are due to dissolution of underground formations, that fall away in the process, more than to surface erosion. It is an interesting fact that near the source of the Rome structure slump only moderately deep excavations of less than 2 miles would have to be made to turn the waters of the Canadian into the drainage area of the Washita.

Classified Advertisements Pages 108-109

EXTENDS GATHERING LINES

OKLAHOMA CITY, Okla., Dec. 29.—An extension of gathering lines in Cotton and Stephens counties to oil wells is contemplated by the American Pipe Line Co., of Wichita Falls. This company recently increased its capital stock from $200,000 to $500,000 for the purpose principally of making Oklahoma extensions. Its trunk line from Burkburnett enters Oklahoma through Walters.

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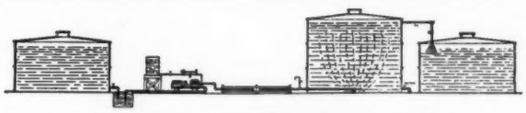

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Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS

Pipe Line Statement for October

Runs

	Month	Daily Av.
*Prairie Pipe Line Co....	2,387,000	77,000
Gulf Pipe Line Co.....	1,043,379	33,657
The Texas Co.	474,227	15,298
Magnolia Pet. Co.	909,711	29,346
Empire Pipe Line Co....	844,521	27,243
Cosden Pipe Line Co....	546,141	17,617
Sinclair Pipe Line Co....	517,281	16,687
*Other lines	7,006,000	226,000
Total October	13,728,260	442,848
Total September	13,995,248	466,507
Difference	266,988	23,659

Shipments

†Prairie Pipe Line Co...	2,500,871	80,673
Gulf Pipe Line Co.....	1,474,651	47,570
The Texas Co.....	404,424	13,046
Magnolia Pet. Co.	408,645	13,182
Empire Pipe Line Co....	800,966	25,838
Cosden Pipe Line Co....	650,357	20,979
†Sinclair Pipe Line Co...	1,327,428	42,820
*Other lines	5,735,000	185,000
Total October	13,302,342	429,108
Total September	13,181,119	439,371
Difference	10,263	

Stocks

*Prairie Oil & Gas Co.	23,000,000
*Prairie Pipe Line Co.	1,350,000
Gulf Pipe Line Co. & Gypsy Oil Co.	8,896,778
The Texas Co.	7,909,376
Magnolia Pet. Co.	7,994,555
Cosden Pipe Line Co.	3,345,257
Empire Pipe Line Co.	2,862,027
*Sinclair Crude Oil Purch. Co....	30,425,000
Carter Oil Co.	17,688,228
*Other lines	4,600,000
Total October	108,071,221
Total September	105,567,684
Difference	2,413,537

*Estimated. †Includes shipments of Texas crude oil.

Note—Stocks do not include approximately 7,200,000 bbls. of crude oil held in storage on private tank farms and leases.

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1920	1921	1922	1923
January	56,004	64,460	67,702	75,790
February	68,699	70,054	75,096	71,093
March	67,745	68,555	78,531	76,592
April	64,589	65,036	75,462	75,614
May	63,937	65,466	77,592	77,365
June	68,750	62,438	76,193	77,592
July	66,489	59,486	76,435	71,879
August	63,861	64,888	79,387	76,910
September	68,102	60,110	78,512	72,358
October	65,066	57,688	77,209	76,256
November ...	62,758	58,470	75,313	.....
December ...	60,975	61,000	73,351	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1920	1921	1922	1923
January	98,835	115,550	119,792	171,067
February	107,146	96,736	111,362	164,219
March	110,777	84,168	127,753	185,487
April	114,090	101,015	127,068	179,751
May	110,219	100,253	127,840	177,102
June	102,598	106,037	137,638	173,598
July	112,340	97,096	137,872	168,320
August	122,296	101,652	153,275	143,766
September	127,131	117,440	158,761	137,266
October	122,891	105,728	165,345	134,597
November ...	117,730	121,803	165,677	131,426
December ...	117,201	104,023	172,861	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines, at the close of each month for the past three years:

	1921	1922	1923
January ...	7,916,353	16,297,858	14,040,567
February ..	8,721,878	17,009,293	14,028,437
March	9,818,766	16,877,937	13,873,146
April	10,369,941	16,777,842	13,737,575
May	11,224,694	16,948,962	13,815,622
June	12,328,126	16,810,169	14,541,253
July	13,798,698	16,669,286	14,645,584
August	15,155,633	16,235,229	14,770,539
September ..	15,525,750	16,228,545	14,803,444
October	15,761,679	15,757,746	14,504,111
November ..	14,971,071	15,171,972	14,157,726
December ..	15,854,741	14,323,765	.....

Franklin Pipe Line Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the stocks and averages reported above:

1922—	Rcpts.	Shipmts.	Stocks
November	3,052.75	2,230.18	30,135.70
December	3,076.36	1,292.84	31,919.22
1923—			
January	2,798.55	2,461.36	32,256.41
February	2,692.93	932.33	34,017.01
March	2,978.88	12,417.00	24,578.89
April	3,529.12	3,054.09	25,053.92
May	3,538.73	4,856.42	23,736.23
June	2,927.71	4,743.78	21,920.16
July	2,996.64	1,471.57	23,445.23
August	3,199.07	3,769.34	22,874.96
September	2,829.79	5,822.38	19,882.37
October	2,694.23	5,251.81	17,324.79
November	2,980.66	4,150.98	16,154.47

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, Dec. 1	2,355,986.29
Runs from wells	518,482.44
Other receipts	89,978.79
Regular deliveries	194,357.29
Other deliveries	522,484.94

The amount of Illinois oil run by the Tidewater Pipe Line Co. in November was 28,376.99 bbls., and deliveries were 91,334.80 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries from the Illinois field as follows:

1922—	Runs	Deliveries
November	566,508.03	434,681.97
December	552,069.33	391,868.37
1923—		
January	599,239.86	470,958.84
February	496,421.79	382,566.83
March	625,006.81	472,920.76
April	521,910.87	423,548.43
May	624,107.98	523,515.00
June	582,511.82	509,137.77
July	594,653.42	489,269.17
August	594,747.94	367,152.82
September	542,561.59	305,926.40
October	576,867.09	347,812.82
November	546,859.43	285,692.09

The Tidewater Pipe Co., Ltd., also delivered in November 213,574.90 bbls. of Oklahoma oil. The total deliveries of all grades by the Tidewater were 447,647.14 bbls.

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for October and November:

	Oct., '23	Nov., '23
Nat. Transit	211,486.93	178,880.95
S. W. Pa. P. L.....	93,352.02	80,301.07
Eureka P. L.	430,327.54	345,268.16
Buckeye P. L. (Macksburg)	280,073.58	266,960.08
Buckeye P. L. (Cleveland)	19,218.85	15,777.99
Buckeye P. L. (Lima, etc.)	144,889.47	130,829.28
Indiana P. L.	14,811.54	13,120.99
Cumberland P. L....	399,736.19	368,174 21
N. Y. Transit	17,402.53	14,967.98
Tidewater P. L.....	163,016.59	139,902.74
Fure Oil P. L.	190,792.36	179,104.65
Emery P. L.	35,209.98	31,556.95
Indian Ref.	315,405.99	292,637.55
Paragon Dev.	31,501.81	30,277.00
Pittsburgh P. L. ...	10,612.83	7,892.18
Swiss P. L.	1,015.89	.....
R'ggs Ref.	5,083.17	.....
Union P. L.	.....	24,630.71
Fords Brk. P. L....	.....	645.36
Allegany P. L.....	.....	1,913.90
Total	2,363,937.27	2,122,845.75
Daily av.	76,256.04	70,761.52

Note—Indian Refining Co. also reported other receipts of 79,218.33 bbls. Paragon Refining Co. had other receipts of 110,958 18 bbls. Paragon Development Co. had other receipts of 4,465.46 bbls. Pittsburgh Pipe Line had other receipts of 2,604 bbls.

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for October and November:

	Oct., '23	Nov., '23
Nat. Transit	497,929.96	457,702.13
S. W. Pa. P. L.....	283,546.24	284,651.72
Eureka P. L.	126,716.26	127,735.31
Buckeye P. L. (Macksburg)	82,031.33	95,645.60
Buckeye P. L. (Cleveland)	1,190.92	1,650.70
Buckeye P. L. (Lima, etc.)	641,793.54	666,847.26
Indiana P. L.	871,560.84	841,834.21
Cumberland P. L. ..	210,110.54	160,272.36
Southern P. L.	.....	256.03
Crescent P. L.	96,990.57	32,231.46
N. Y. Transit	487,332.82	296,254.77
Northern P. L.	32,004.07	37,699.13
Tidewater P. L.	166,403.18	142,737.44
Pure Oil P. L.	152,289.34	170,187.25
Emery P. L.	34,574.09	31,273.79
Paragon Ref.	145,280.60	110,383.32
Indian Ref.	291,983.99	415,340.39
Paragon Dev.	37,398.15	36,367.36
Pittsburgh P. L. ..	13,262.01	10,943.10
Swiss P. L.	94.20	.....
Riggs Ref.	.....	.....
Union P. L.	.....	18,696.72
Fords Brk. P. L....	.....	692.77
Allegany P. L.	.....	1,918.04
Total	4,172,493.66	3,942,774.00
Daily av.	134,596.57	131,425.67

Gross Stocks

The gross stocks held by various pipe lines in the oil producing section of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky at the close of October and November, were as follows:

	Oct., '23	Nov., '23
Nat. Transit	1,197,386.76	1,190,570.03
S. W. Pa. P. L....	879,120.26	743,386.59
Eureka P. L.	2,004,502.23	1,973,153.32
Buckeye P. L. (Macksburg) ...	500,740.53	476,597.93
Buckeye P. L. (Cleveland)	30,341.60	13,441.31
Buckeye P. L. (Lima, etc.)	4,305,655.97	4,312,262.30
Indiana P. L.	664,435.62	721,584.20
Cumberland P. L...	667,160.74	668,283.31
Southern P. L.	1,027,470.36	1,009,173.61
Crescent P. L.	69,131.69	53,490.91
N. Y. Transit	1,457,294.82	1,171,984.62
Northern P. L.	664,694.04	771,268.01
Tidewater P. L.	.....	.....
Pure Oil P. L.	323,826.50	331,262.91
Emery P. L.	6,273.97	6,790.81
Paragon Ref.	166,464.07	167,737.04
Indian Ref.	516,278.86	475,752.61
Paragon Dev.	10,052.07	8,401.46
Pittsburgh P. L. ..	9,272.45	8,879.24
Swiss P. L.	2,861.55	.....
Riggs Ref.	1,146.43	.....
Union P. L.	.....	22,969.31
Fords Brk P. L....	.....	294.36
Allegany P. L.....	.....	574.43
Total	14,504,110.53	14,157,726.97
Decrease	293,333.34	346,384.46

Grades of Oil

The following table shows the amount of the different grades of oil held by the eastern pipe lines at the close of October and November, showing the gross stocks of the above fields:

	Oct., '23	Nov., '23
Pennsylvania	3,791,868.58	3,818,321.71
Lima	937,787.17	816,253.07
Kentucky	1,964,677.82	1,906,541.15
Mid-Continent	7,244,243.62	6,937,321.33
Illinois	565,533.34	584,577.43
Total	14,504,110.53	14,157,724.67

AVERAGE WEEKLY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF PORTS

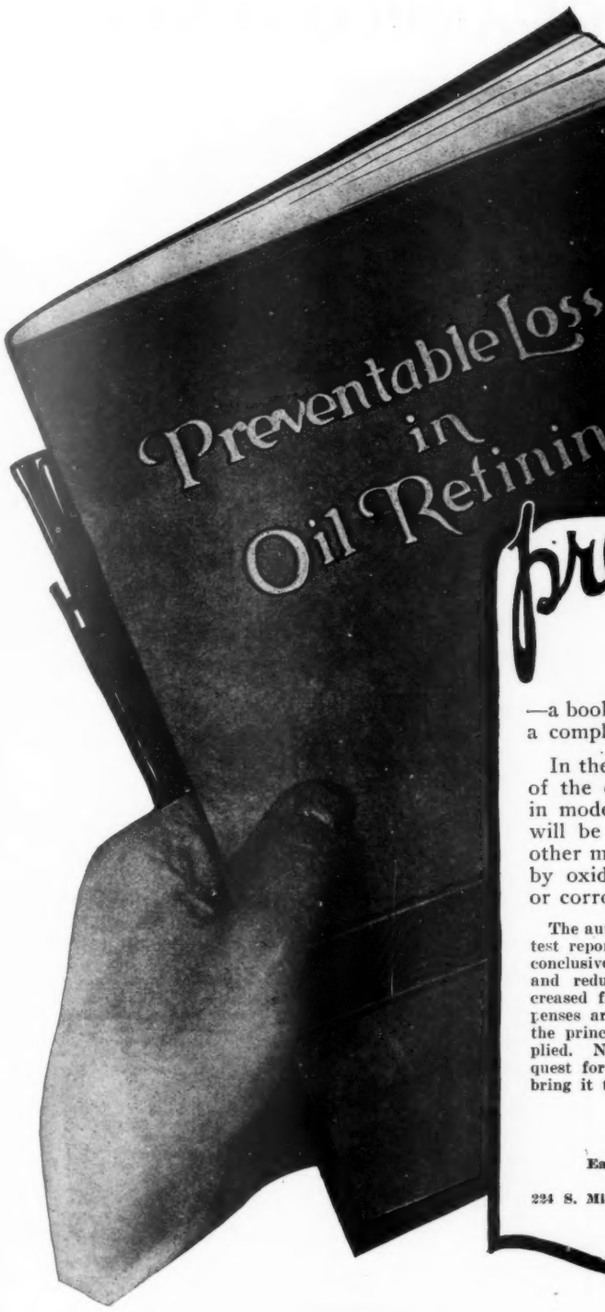
Av. bbls. per wk.—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans Baton Rouge	Pt. Arthur Sabine Pass	Tampa	Total	Total All Ports
July	110,750	18,750	517,000	185,250	121,750	952,500	.....	139,750	.....	.....	139,750	1,092,250
August	116,067	51,709	688,485	222,373	151,970	1,231,104	.....	24,612	219,030	.....	243,642	1,474,746
September	205,600	47,400	516,200	124,200	126,600	1,000,000	.....	140,600	.....	.....	140,600	1,140,600
October	195,000	56,000	626,000	220,000	107,000	1,178,000	.....	208,000	.....	.....	208,000	1,386,000

AVERAGE WEEKLY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Av. bbls. per wk.—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	Baton Rouge New Orleans	Sabine Pass Pt. Arthur	Tampa	Total	All Ports Total
May	114,665	128,750	256,500	109,250	153,750	662,915	335,250	227,500	298,500	63,500	924,750	1,587,665
June	62,800	84,200	358,200	153,400	161,800	757,600	301,000	228,400	212,400	45,800	787,600	1,545,200
July	71,750	116,250	451,500	112,000	218,750	970,250	367,750	280,000	208,250	23,000	879,000	1,849,250
August	116,065	89,113	374,613	102,970	197,127	879,888	338,485	266,224	234,388	45,633	1,295,730	2,175,618
September	53,600	113,000	353,200	132,000	149,600	801,400	355,200	279,400	176,000	44,800	714,200	1,656,600
October	91,250	48,000	198,500	134,000	204,000	800,750	247,000	352,500	95,000	125,000	707,000	1,507,750

PRODUCTION BY MONTHS AND DAILY AVERAGE PRODUCTION IN THE U. S. FOR 12 MONTHS

1922—		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Wyoming Montana	Other Fields	Totals
November:	Month	14,035,527	12,613,560	8,676,000	2,646,091	1,023,450	2,529,150	2,908,800	3,295,290	47,637,573
	Daily average	467,818	420,452	289,200	88,261	34,115	84,305	96,960	106,483	1,587,923
December:	Month	15,426,810	13,185,416	8,707,931	2,649,900	1,596,500	2,463,291	3,108,866	3,149,445	50,288,159
	Daily average	497,639	425,336	280,901	82,330	51,500	79,461	100,286	101,595	1,622,309
1923—										
January:	Month	16,457,445	13,328,574	8,881,009	2,826,611	2,317,002	2,428,018	3,124,707	3,423,516	52,786,882
	Daily average	530,885	425,817	286,484	91,181	74,742	78,323	100,797	110,436	1,702,642
February:	Month	16,426,759	12,045,020	7,663,992	2,748,660	2,258,984	1,084,008	2,922,192	2,907,340	48,056,955
	Daily average	586,670	444,465	273,714	91,622	80,678	67,286	104,364	104,405	1,716,339
March:	Month	19,608,192	13,955,828	8,462,783	2,847,040	2,970,575	2,312,600	3,274,778	3,464,529	56,896,325
	Daily average	632,525	450,188	272,993	91,840	95,825	74,600	105,638	111,759	1,835,368
April:	Month	20,695,959	14,399,610	8,403,240	2,768,052	2,766,000	2,160,300	3,584,048	3,281,340	58,058,549
	Daily average	689,865	479,987	280,108	89,292	92,200	72,010	115,947	109,378	1,935,295
May:	Month	21,535,365	15,658,732	8,932,000	2,805,750	3,389,000	2,175,000	3,566,600	3,546,400	61,608,697
	Daily average	694,689	505,122	288,129	93,525	109,323	70,161	115,051	114,400	1,987,397
June:	Month	22,667,106	15,572,730	8,817,000	2,797,830	3,078,990	1,981,800	3,385,600	3,401,400	61,702,456
	Daily average	755,570	519,091	293,900	93,261	102,633	66,066	122,853	113,380	2,056,748
July:	Month	25,262,082	15,260,184	10,662,000	2,448,566	2,859,000	2,012,000	4,143,400	2,788,600	65,435,832
	Daily average	814,906	492,264	343,935	78,986	92,226	64,903	133,657	89,955	2,110,832
August:	Month	26,440,005	14,049,076	11,454,000	2,316,320	3,113,000	2,078,000	4,180,000	3,473,300	67,103,701
	Daily average	852,903	453,196	369,484	74,720	100,419	67,032	134,861	112,043	2,164,603
September:	Month	25,762,500	12,812,220	12,287,000	2,234,130	3,350,000	1,855,000	4,449,500	3,262,800	66,013,150
	Daily average	858,750	427,074	409,567	74,471	111,666	61,834	148,317	108,760	2,200,438
October:	Month	24,576,000	12,961,782	14,903,000	2,336,346	3,046,100	1,861,000	3,460,000	3,468,200	66,612,428
	Daily average	792,787	418,122	480,742	75,366	98,263	60,032	111,613	111,877	2,148,709
	Twelve months	248,893,760	165,842,782	117,849,954	31,425,296	31,768,501	24,940,167	42,108,491	39,372,168	702,591,121
	Total daily average	681,901	454,391	322,877	86,097	87,037	68,329	115,366	107,869	1,923,867



and how to prevent them!

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Here is a book that any refiner will be glad indeed to read —a book he may have by merely asking for a complimentary copy.

In the text there is a complete discussion of the cause and cure of the chief losses in modern stills. The pages of this book will be welcomed wherever still tubes or other metal parts are ruined all too quickly by oxidation, carburization, coke deposits or corrosion.

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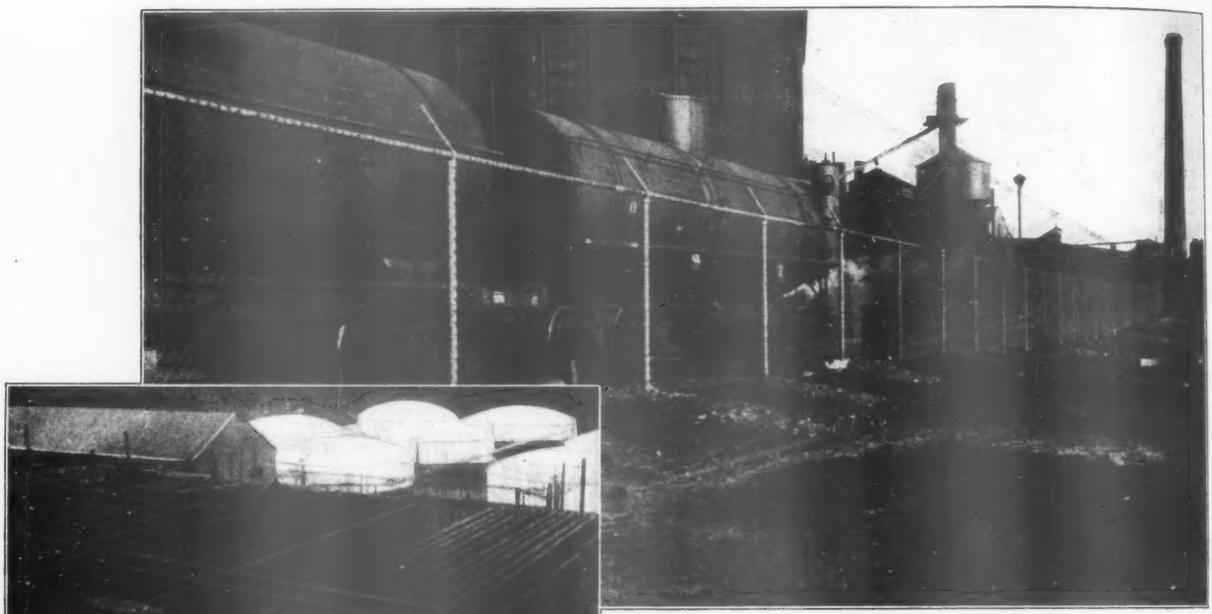

THE NATIONAL REFINING CO.
COFFEYVILLE, KAN.

June 22, 1922

Monongahela Tube Co.
Pittsburgh, Pa.

Gentlemen:

In June, 1915, we equipped our No. 4 condenser box with ARMCO Pipe. This box has been in continuous service up to the present time, making two runs per day.

In June, 1918, the three top rows of ARMCO Pipe were replaced with steel pipe. Six months later the steel pipe was replaced. In another half year the entire coil was removed and some of the original ARMCO Pipe was still serviceable.

THE NATIONAL REFINING CO.
(Signed) H. B. SETZLER
Superintendent

SIX times the life of steel---that's the record of ARMCO Ingot Iron Pipe in condenser boxes of the National Refining Co.

So when the Union Petroleum Co., of Westwego, La., bought a fence to protect their property, they chose Page-Armco, because it was the only fence to be had of ARMCO Ingot Iron, the most uniformly durable material used for woven wire fencing.

Tests indicate that Page-Armco fence, like ARMCO Pipe, will outlast several installations of steel fence. Write for illustrated catalog showing typical examples of property protection.

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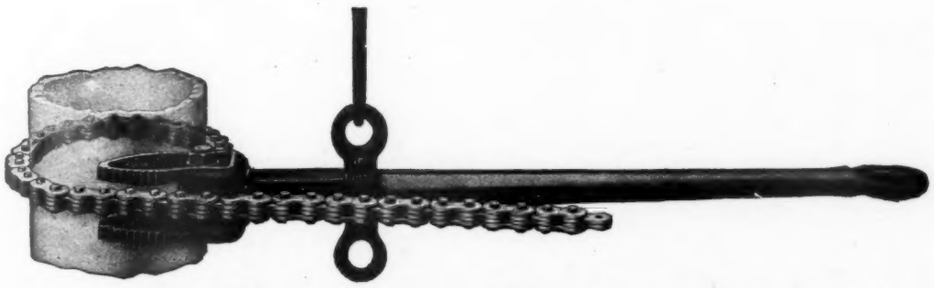
ARMCO Ingot Iron

The only wire fence made of Armco Ingot Iron



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The mechanical perfection of the **Genuine Williams' ("VULCAN") Break-out Wrench,** better known as "MAUD," made it a prime favorite in oil fields the world over. Its quarter of a century of experience in this industry has always found it ready for the heaviest kind of work.

For superior service in both Standard and Rotary drilling, the **Williams' "VULCAN"** stands the unchallenged leader for efficiency, durability, and economy.

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3. The large swinging link which connects the chain with the through bolt, is drop-forged from a fine grade Chrome Vanadium Steel and is heat-treated.
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5. Each chain is proof-tested—guaranteeing uninterrupted, dependable service, as well as safety to the operator.

The breaking strain of this flat link chain is 40,000 lbs.

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SUPERIOR DROP-FORGED TOOLS

"VULCAN" BREAK-OUT WRENCH

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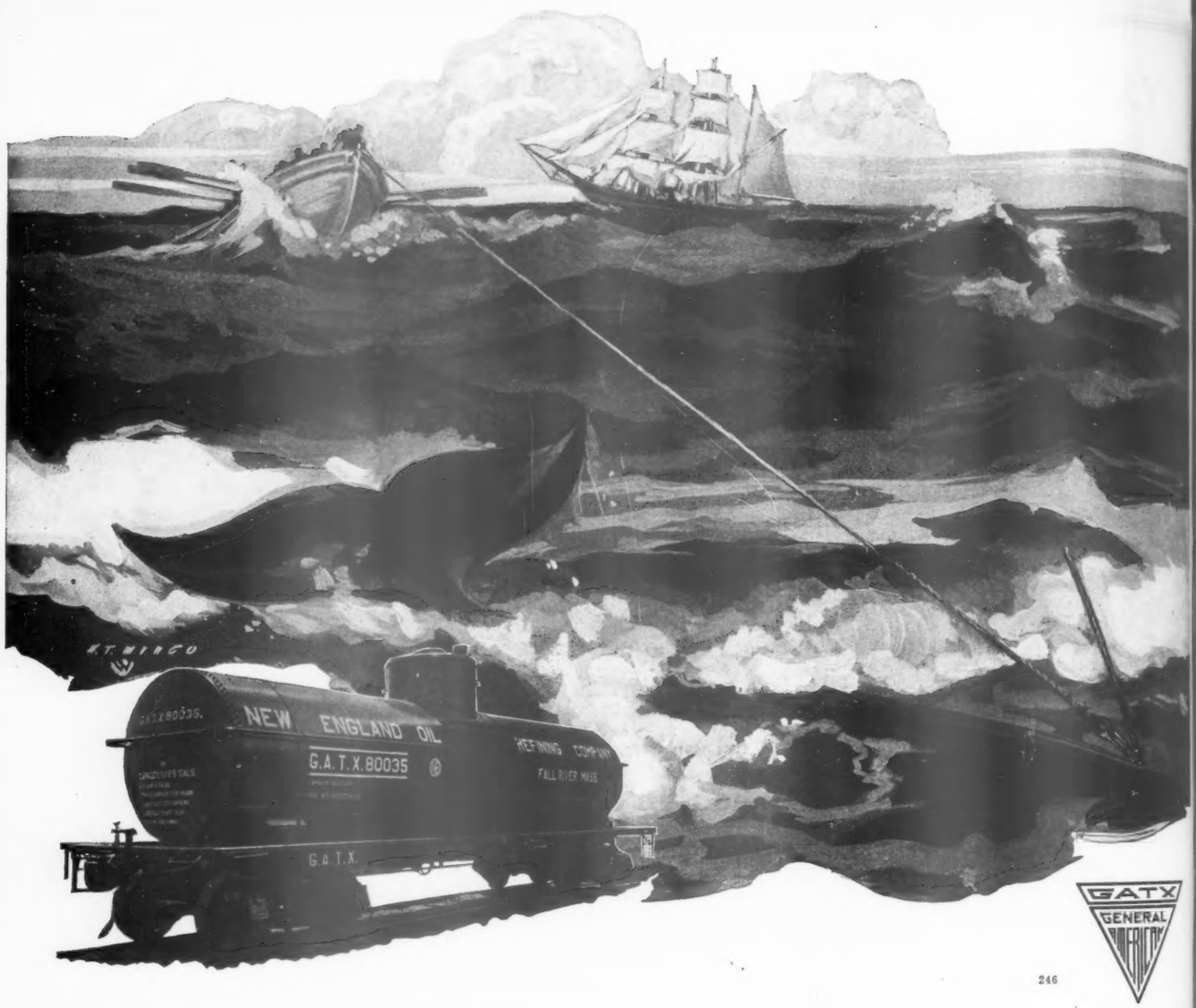

Down to the Sea in Ships—For Oil

Gone are the days of the New England whalers. Vanished the old sperm oil industry of the Massachusetts coast. No longer the topmast lookout's cry of "Blo-o-w-w-ws" is a signal to put the boats overside.

The antiquated methods of the nineteenth century have long ceased to supply the needs of modern commerce. Petroleum is the new leviathan.

All the sperm oil brought to land from 1877 to 1886 could easily be stored in 132 General American Tank Cars! The fleet of 735 whaling ships that sailed from the ports around New Bedford seventy years ago, is but one-sixteenth as large in capacity as the leasing fleet of GATX tank cars available for refiners and operators today.

Thus commerce changes things, relegating the romantic but inefficient methods; supplementing surer if more prosaic means of supplying the world's needs. So, too, has General American grown, rendering a service today in keeping with the needs of modern industry, whose heart blood is the very oil it carries.

Call in a General American representative and let him tell you how we are equipped to handle your problem of moving liquids of any kind, with the minimum detail.

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Field Storage and Refinery Equipment

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When hidden weaknesses exist, he will seek them out and attack them tooth and nail. You can cheat him only by eliminating those weaknesses. You can be sure they do not exist only by dealing with a company whose reputation for time-defying tank equipment is thoroughly established. Biggs tanks have that kind of a reputation.

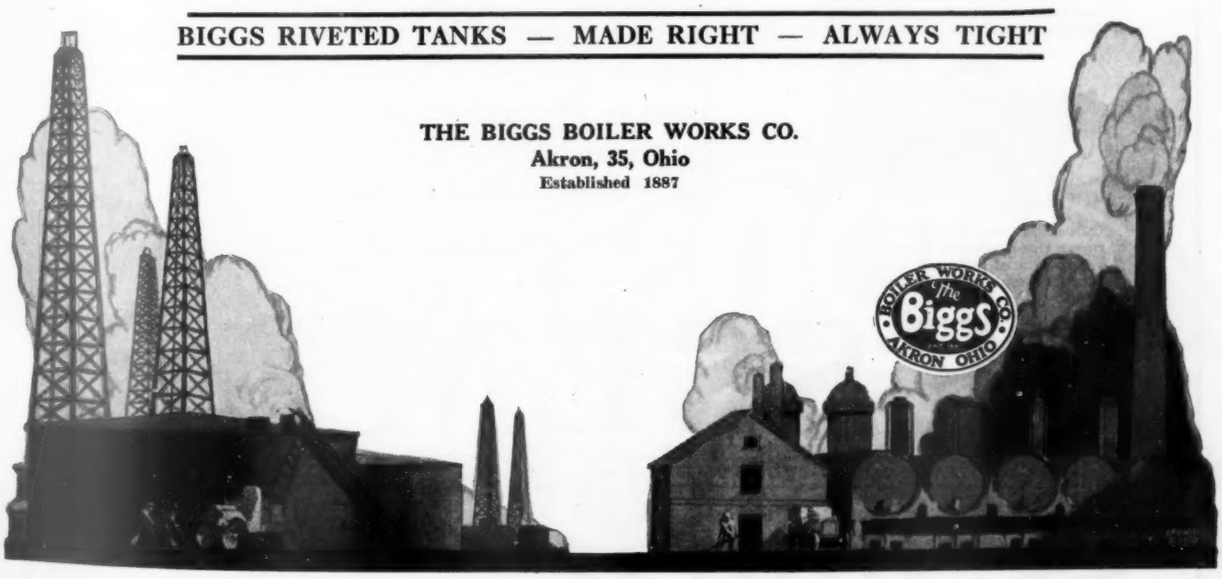
For 36 years The Biggs Boiler Works Company has specialized in steel tank construction and has built up through these years a highly efficient, thoroughly equipped plant to back up its knowledge of what a tank should be.

You can lean with perfect confidence on Biggs experience and make an investment for years to come when you buy tanks.

Send us your specifications for Petroleum tanks of any kind, — stills, agitators, run-down tanks, etc., for refining eqiupment, and field storage tanks of 55,000 barrels capacity and up.

The big, new addition to the Biggs plant, built expressly to serve the Petroleum industry, is added assurance that your requirements will receive the most prompt and careful attention.

BIGGS RIVETED TANKS — MADE RIGHT — ALWAYS TIGHT



THE BIGGS BOILER WORKS CO.
Akron, 35, Ohio
Established 1887

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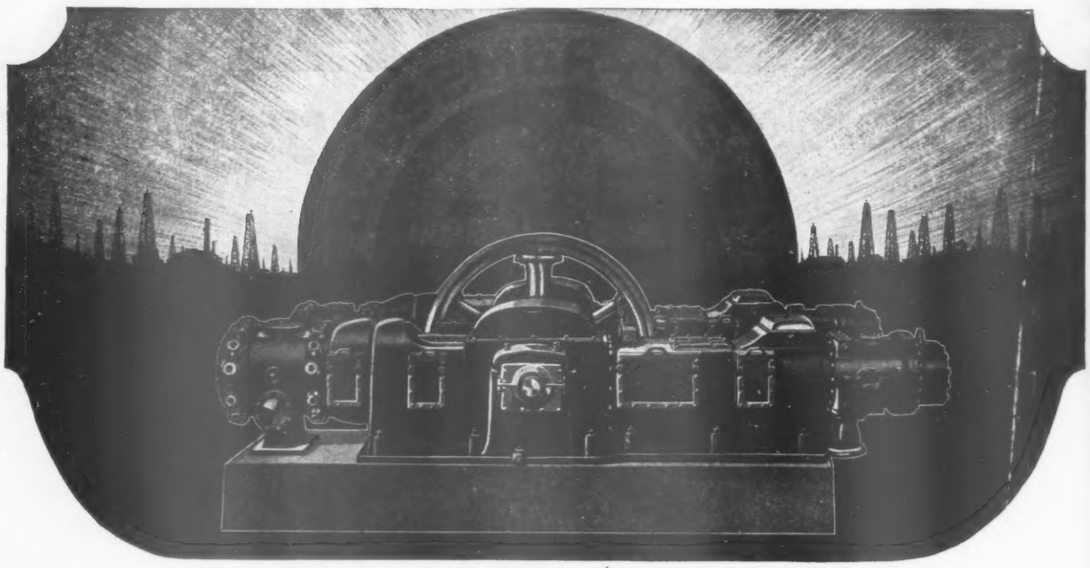
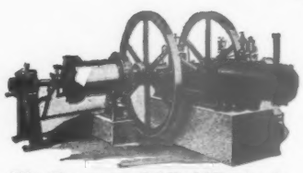


Type Ten Bessemer Direct Gas Engine Driven Compressor



The Bessemer Oil Field Engine is the standard of the industry, and will be found in every oil field.

Bessemer Type VIIIB Compressor with engine and compressor in one unit. Standard equipment in the Gasoline-from-Gas Industry.

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Oil field service is not theoretical—it is a problem of making good under conditions which are not ideal.

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With the Pioneers

A pioneer derrick for pioneers! That truly epitomizes the position of the Moore derrick in the oil and gas industry. It was the first really successful steel derrick. By its simple, practical and rugged construction, it practically created the steel derrick industry. Since then it has ever accompanied pioneers into new and unexplored fields. And once in, an ever-growing family of other Moore derricks soon grows up around it. For it never fails to give satisfaction.

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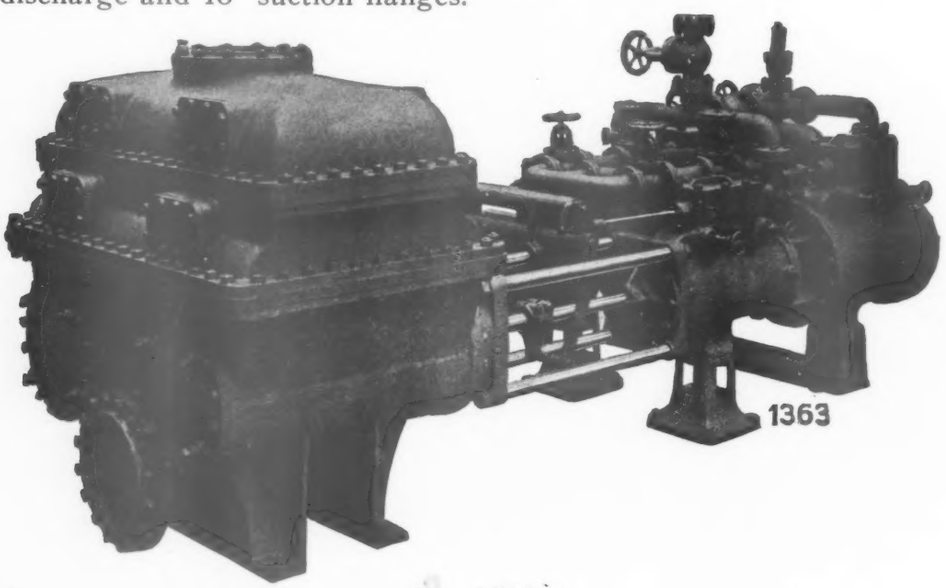

Fig. 1363

TRANSIT 14", 20" x 16½" x 24" COMPOUND HORIZONTAL DUPLEX SEPARATE CHEST TYPE, with separate valve plates. **PUMP**

Remarkable "Turnaround" records have been made by Standard Tankers using these pumps. On the sea, as a cargo oil pump, and on land as tank pumps, they cannot be beaten.

Tie-bar construction cuts down the weight, and renders the stuffing boxes much more accessible.

Steam ends simple or compound as illustrated.

Your "conditions" will bring a description of the pump best adapted to your work.

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PUMP AND MACHINE COMPANY
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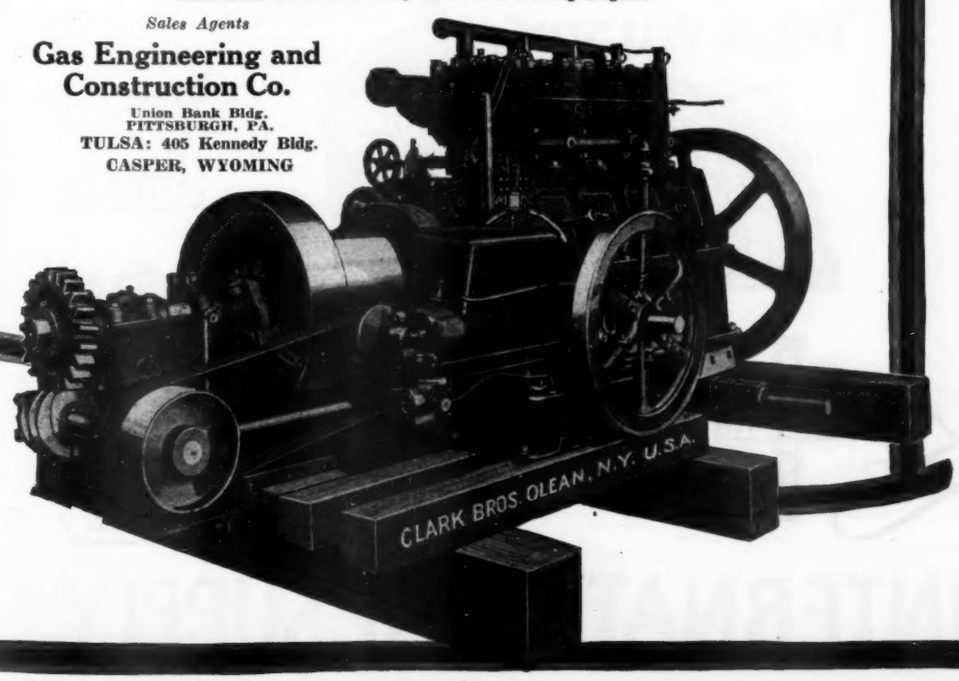

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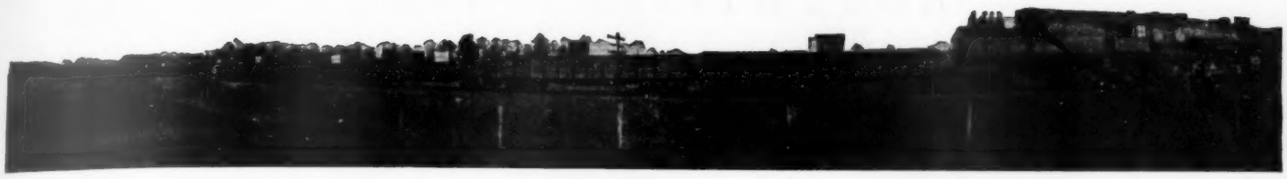

When Powell Broke Loose

Humble needed tanks, and needed them badly. They called on P. I. W. with the result shown above. In less than three days from receipt of the first order a solid trainload of 10 ***complete*** 55's was enroute to Corsicana, making record time. Following the first train came a second and a third, all in less than two weeks.

The Humble farm at Corsicana is shown below. In the foreground is a veteran, P. I. W. field crew. The progress of the work can be seen. Ready for oil in less than three weeks!

That's P. I. W. Service

THE PETROLEUM IRON WORKS COMPANY

SHARON, PA.

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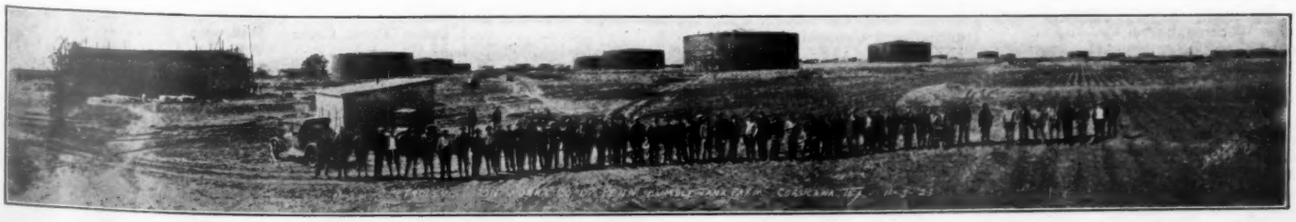

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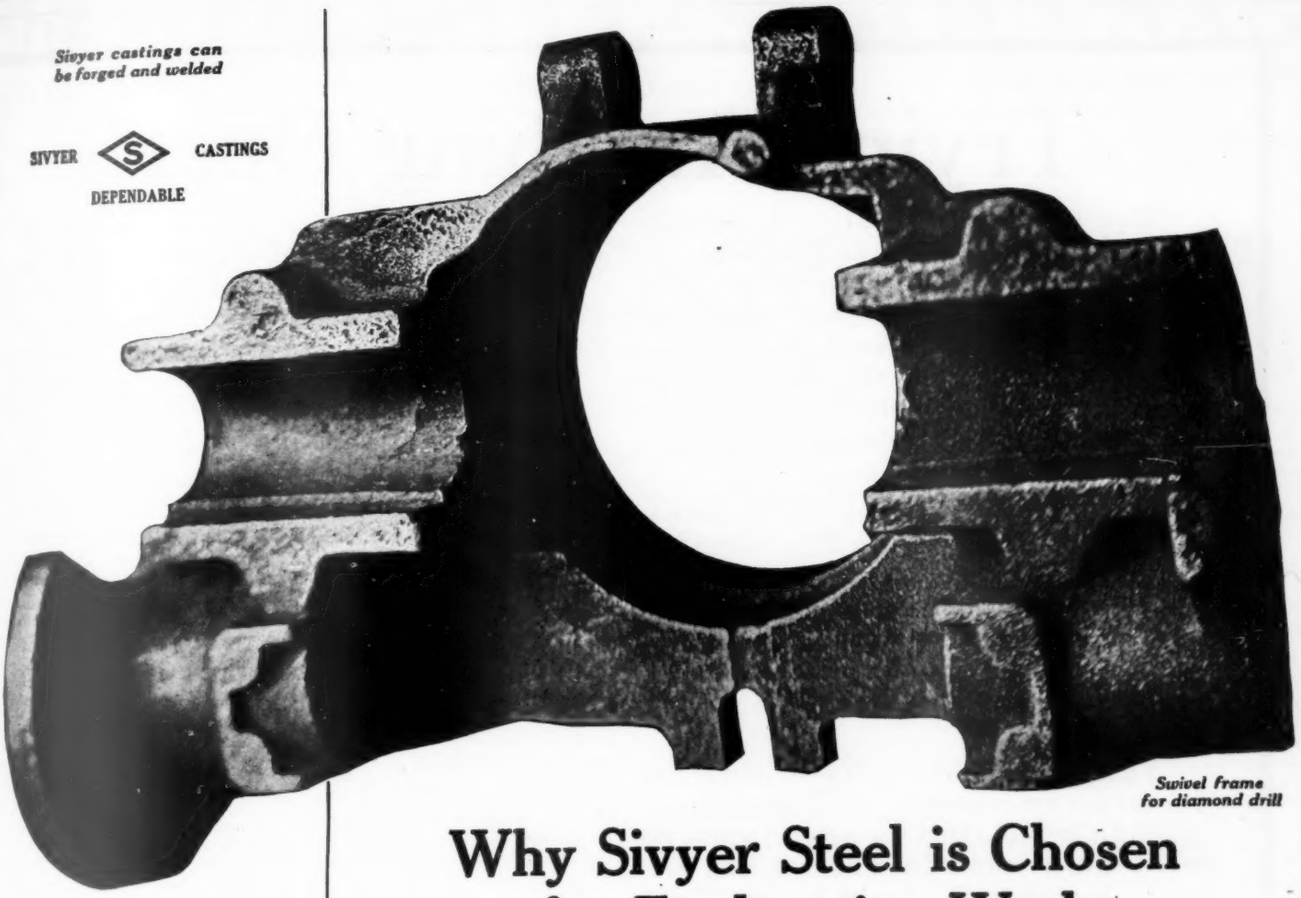

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